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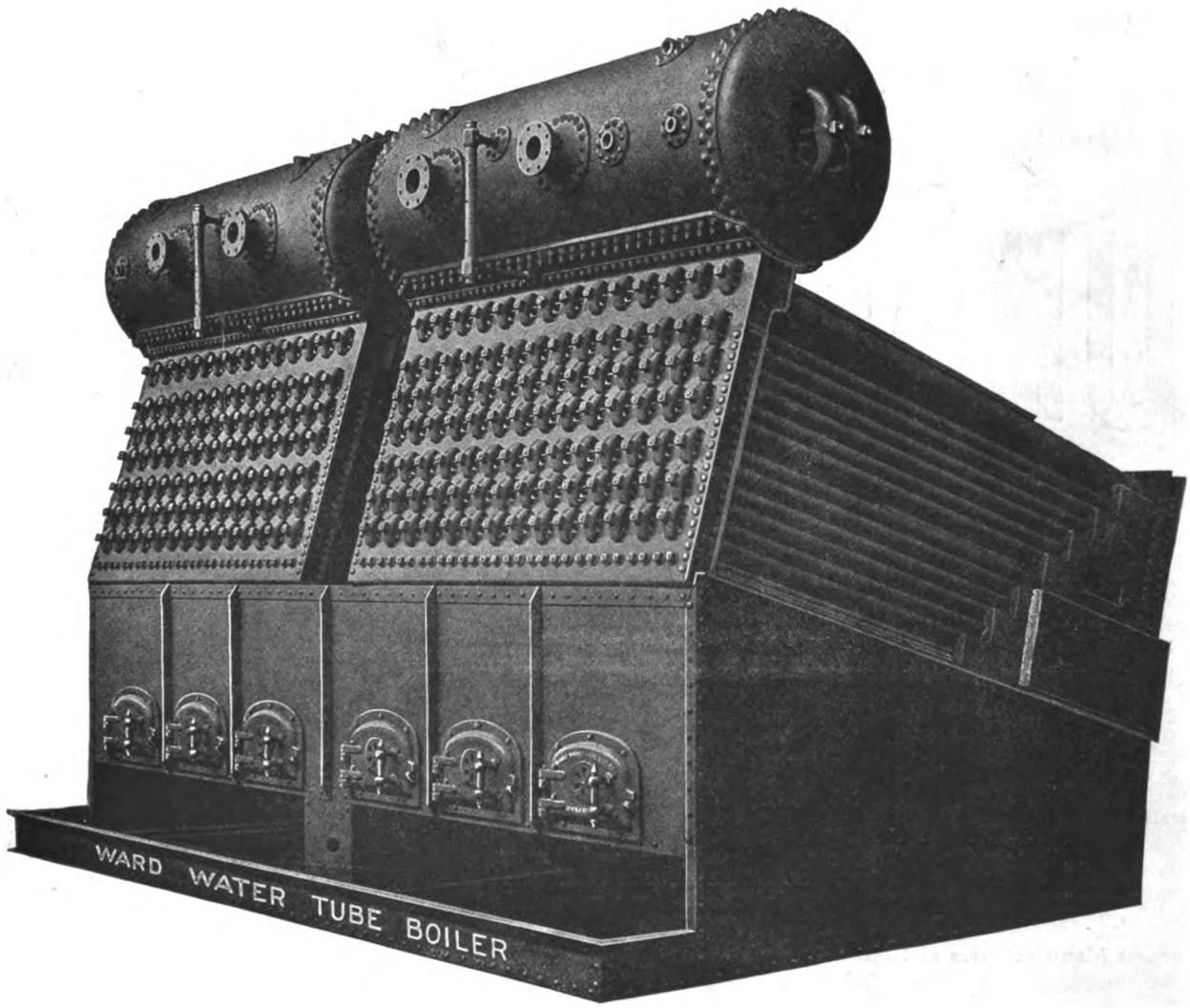

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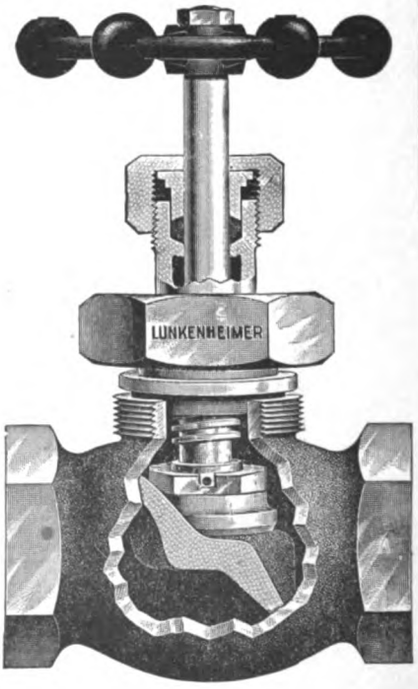

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International Marine Engineering

DECEMBER, 1914

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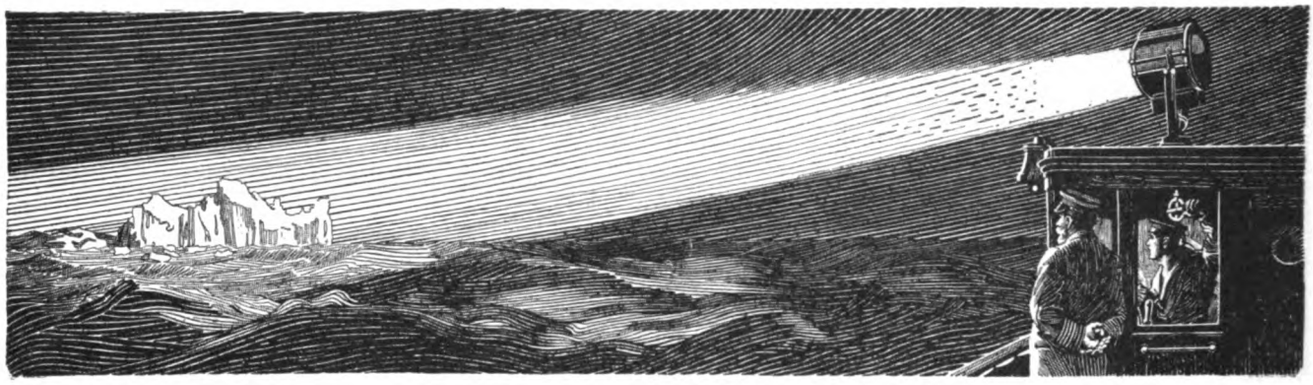

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Sturtevant
(REG. U. S. PAT. OFF.)

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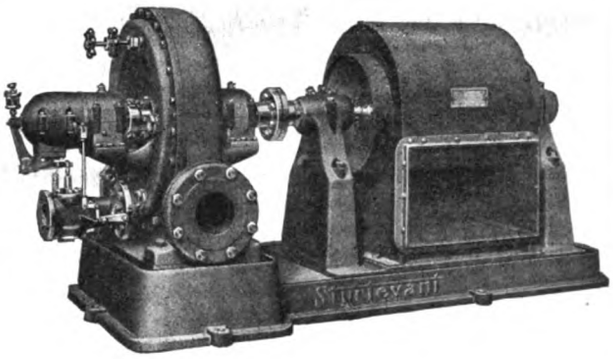

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AMERICA

Engineers who keep a file of books for reference will be interested to know that the Joseph Dixon Crucible Company, Jersey City, N. J., still have a limited number of booklets, dealing with such subjects as "Steam Traps," "Unions for Steam Pipes," "Feeding Graphite for Lubricating Purposes," etc., which will be sent free as long as the supply lasts to anyone who cares for them. These treatises were prepared by the well-known engineer Mr. W. H. Wakeman, who has written many articles on practical engineering problems. Numerous illustrations are used to make each subject easily understood.

"Portable Acetylene Lights" is the title of a handsomely printed booklet published by the Alexander Milburn Company, 1420 West Baltimore street, Baltimore, Md. These lights are stated to be especially valuable for use on piers and docks, for loading and unloading ships at night, and for similar purposes. "The Milburn acetylene light is the result of fourteen years' manufacturing experience by the inventors of this class of light, who devote their whole organization to its manufacture and improvement. They have successfully manufactured and sold over 80,000 acetylene generators, both portable and stationary, giving an aggregate of more than 80,000,000 of candlepower, and have never caused a fire or a serious accident. As a result the Milburn light meets the most exacting demands of contractors, railways, industrial plants, the United States Government, fire departments, circuses, hippodromes, life-saving stations and others requiring powerful outdoor illumination. It is used on construction work, in mines and quarries, on steam shovels and dredges, in camps and exhibitions and many other places. It is now recognized as standard and has thousands of satisfied users throughout the United States and Canada and in other countries all over the world."

A "Safety Calendar" has been issued by the National Tube Company, Frick building, Pittsburg, Pa. The company has designed this with the idea of giving it away to every one of its employees, approximating 30,000; the idea being that it will be taken home and hung on the wall, and so be a daily reminder of the "safety" idea. "The 'safety' idea is probably epitomized in the picture shown on the calendar and in the phrase 'Taking No Chances.' This picture was selected out of about a dozen different pictures submitted, and is the product of one of the leading staff artists on *Life*. The picture is copyrighted by the National Tube Company. It will be noted each month bears a separate motto, such mottos being as follows: Every danger sign posted in the mill means that the danger pointed out is real. Men must ascertain what is on these signs around places where they work and give heed to the warnings. The red ball on a sign means danger. It is better to be careful a thousand times than to be injured once. Get the safety habit. If you see a man acting carelessly tell him about it, and don't be afraid of hurting his feelings by doing so. Neglect of slight injuries often results in blood poisoning and serious trouble. The company has provided an emergency hospital, where employees injured in the mill can receive the best of attention. Don't neglect small injuries. Your eyes are valuable to you. Wear goggles when working where chips or sparks may fly. They may be awkward at first, but you will soon get used to them, and then you wouldn't work without them. A dirty mill means accidents. Do not leave waste material or refuse lying around. Places are provided for keeping it. Do your part towards keeping the mill clean. The women and children of an employee's family can be of great help in the safety work by continually urging him to be careful and use safe practices. If he has a slight cut or injury insist that it be dressed promptly at the mill emergency hospital. It is a criminal violation of the law to give or receive money or anything of value in return for a job. The company will rigidly enforce this law. Many employees used to think it was brave to do work in a reckless way and cowardly to be looking out for one's safety. Fortunately such people have become scarce. They are now regarded as fools, and they are discharged when the management finds them out. Reports show that new employees and men engaged in new work are more likely to be injured than old employees. Remember this, and find out the special dangers to be avoided when starting on new work. Your foreman will tell you. The majority of the accidents in the mill are due to some one's carelessness, and frequently to the carelessness of the man himself who is injured. Cultivate safety habits. The company does not want careless men in its employ. Playing, wrestling or fooling on the mill premises, as well as playing or fooling with machinery or tools, is dangerous. Such conduct is strictly prohibited. The careless handling of materials in a steel mill produces more accidents than any other single cause. Remember this when you are moving or handling materials."

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Any of our readers interested in boiler graphite should write to the Joseph Dixon Crucible Company, Jersey City, N. J., and ask for Book No. 75, which states fully the advantages of using graphite in marine and stationary boilers.

A patent piston and piston valve packing for reciprocating engines of any make—marine, stationary, steam, gas, water or ammonia—is described by the Lockwood Manufacturing Company, East Boston, Mass., in a catalogue the company has just issued.

Metal filing-cabinets, made especially for use in shipyard drafting rooms, are described in folders published by the Art Metal Construction Company, Jamestown, N. Y. "Drafting rooms, offices and vaults are usually overcrowded. Not enough thought has been given to the safe filing of important drawings, plans, blue prints, plats, etc. After a careful study, the manufacturing skill of the world's largest metal furniture plant has perfected this planfile, built to meet the existing conditions found in the field."

The Portland Company, Portland, Me., has issued Bulletin No. 64 on the subject of wooden towboats. The following statement is made in this bulletin: "Wooden towboats are considered far superior to steel by many authorities. Steel hulls require practically continuous attention with paint and calking tools, and when in need of repairs the ports where such repairs can be made are very limited in number. Wooden hulls, on the other hand, can be repaired almost anywhere on the coast, and can be kept up with so much less care and expense that many large towing concerns will build nothing but wooden towboats."

Blue printing by electric light is the subject of some circulars issued by the Eugene Dietzgen Company, 218 East Twenty-third street, New York. "While blue printing by electric light has eliminated the 'weather-permitting' clause in drafting room calculations, it was not until our latest model electric blue printer was perfected that it was possible to secure a satisfactory machine at a reasonable cost. Our cylindrical self-contained electric blue print machines are adapted for use in small drawing offices as well as large, for they occupy a space of but 3 feet square, and do not require a special operator. Briefly, we want to allude to our extensive line of blue print papers, both prepared and unprepared. With our main and branch houses equipped with the most modern coating rooms, we are prepared to meet your every requirement, and with the utmost despatch."

Electric service on board ship is the subject of Bulletin 4926, published by the General Electric Company, Schenectady, N. Y. Among the electric devices manufactured by the General Electric Company are the following: Edison Mazda Lamps, in all sizes, are especially adapted for lighting any part of the boat. G-E electric fans and electric stateroom heaters provide comforts. The G-E marine searchlight increases the scenic advantages as well as the safety at night. Electric cooking and heating devices of all kinds can be operated at a cost incomparable with the convenience and simplicity. Power motors for the windlass, pumps, etc., can be located conveniently and operated by the turn of a switch. The source of power most economical and convenient for yachts and motor boats is the G-E gasolene engine generator—a thoroughly reliable direct-connected unit which operates successfully with minimum attention. For vessels having steam, the G-E steam engine generator or turbine may be used.

"The Bearing" is the title of a monthly booklet published by the Albany Lubricating Company, 708 Washington street, New York. In connection with the company's statement that the older Albany grease becomes the better it gets, the following instance is cited: "When we moved out of our old factory several years ago there was found among the discarded cups in the cup department an old-style Albany cup that was filled with Albany grease. That style of cup has not been manufactured or in use for the past twenty-five years. From all indications the Albany grease contained in this cup must be twenty-five to thirty years of age, and when examined was found to be in perfect condition. The Albany grease hadn't dried up, it hadn't become rancid nor gummy, it hadn't discolored through oxidation. This instance goes to prove to a great extent our assertion, that the older Albany grease becomes the better it gets. This characteristic of Albany grease works out to the advantage of the purchaser. It permits him to buy in larger quantities. Where a 10-pound can is purchased and used as required, a keg, half-barrel or barrel could be bought at a considerable saving per pound. Many concerns have taken advantage of this fact and are purchasing Albany grease in the wooden packages."

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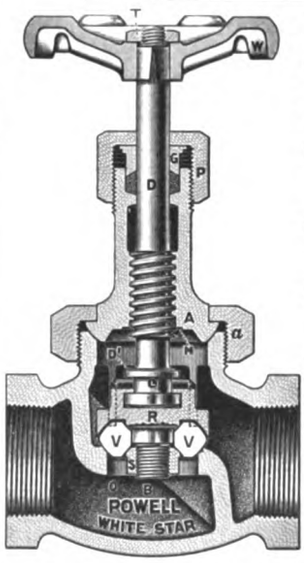

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1. Body symmetrically designed and well proportioned.
2. Metal distributed to meet most wear. Note thickness of diaphragm.
3. Union bevel ground joint connection between body and bonnet.
4. They have regrindable, reversible and renewable White Powellium bronze discs.
5. All working parts made to gauge and are interchangeable.

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DEPENDABLE ENGINEERING SPECIALTIES.
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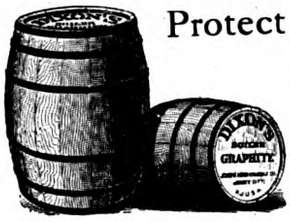

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Sold at exceptionally low price.

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The Edwards Manufacturing Co.

324-344 E. 5th St., Cincinnati, Ohio

Non-inflammable bulkheads and deck panels are described by the Keyes Products Company, 71 West Twenty-third street New York, in a catalogue the company has just issued. These are said to be water-resistant, light of weight, hard, rigid, and to have splendid tensile strength. Free samples will be sent to anyone interested upon request.

Turbo-fan units for marine work are the subject of Catalogue 210-O, just issued by the B. F. Sturtevant Company, Hyde Park, Mass. These sets are especially made for forced draft work, and the statement is made that the large volume handled by comparatively ssmall units makes them invaluable for marine service, where space is always restricted.

Metal polish for use on board ship is described in a catalogue published by the Hirshe Manufacturing Company, 65 Oliver street, Boston, Mass. This is stated to be a non-explosive, non-settling and non-scratching polish. It is said to contain no acid and to give a brilliant and lasting lustre and to dry quickly.

Ship ventilating thermofans, distillers, evaporators, oil burners, grease extractors, fuel oil burners and other marine specialties are described in a new catalogue just published by the Schutte & Körting Company, Twelfth and Thompson streets, Philadelphia, Pa. This is a valuable catalogue and a copy should be in the hands of every marine man. One will be sent free to any of our readers upon request.

Oil engines of the Diesel type are described in a bulletin published by the Fulton Iron Works, St. Louis, Mo. "The engine is designed to operate on the cheapest petroleum, crude or fuel oils, or tar oils, with greatest reliability and economy, and as ignition is insured by the heat of compression, no hot head, hot plate, electric spark, or other exterior means of ignition is required."

"Booklet IM—The Economy Steam Turbine" is published by the Kerr Turbine Company, Wellsville, N. Y. "From one end of this country to the other, and especially in marine service, 'Economy' turbo-generators are effecting big savings in furnishing light and power for boats and ships of all kinds. The performances of so many 'Economy' turbo-generators are now on record that our engineers can tell you almost to the penny what an installation would do for you."

The Reilly multi-screen feed-water filter and grease extractor is described in Bulletin 607, published by the Griscom-Russell Company, 2124 West Street building, New York. The use of this filter, the catalogue states, guarantees clear water for boilers with the least possible trouble. "The efficiency of a filter depends upon the extent of the filtering area. The Reilly multi-screen has a filtering surface 500 times the cross-sectional area of the feed pipe—much the largest area ever put in so compact a shell."

The Powell "Union" Composite Disk valve is the subject of a folder published by the William Powell Company, Cincinnati, Ohio. "For medium steam pressure, hot water or steam heating the Powell Union composite disk valve embraces the newest and most practical ideas in valve construction. The beveled ground face connection between bonnet and body neck secured by hexagonal union nut, insures an absolutely steam-tight joint under all pressures. The hexagonal union nut can be unscrewed hundreds of times without rounding the corners caused by the wrench slipping. This is an important improvement over the old-style inside thread, red leaded or cemented bonnet, especially on this type of valve, which requires to be taken apart more frequently than a metal disk valve. Stems are packed with a drive gland on stuffing-box on ¾ inch and larger, with plenty of space for packing. Long, full Acme threads on stem, consisting of six threads. These six threads are all in actual use when valve is closed and prevent stripping from too strenuous use. The stem *D* has double forcing collars on its lower end, which engage with the slotted cage *H* that holds the disk *V*. The upper collar prevents the cage from wobbling in opening and closing the valve. The upper face of the top collar also fits against the lower face of the bonnet hub, and allows the valve to be repacked under pressure, wide open. To insert a new disk the cage *H* can be instantly withdrawn by sliding it out from between the collars on the stem. The disk is held in place by disk nut *S*, which can be loosened readily if necessary. No special tools are required in renewing disk. The disk holder is guided to a true axial position by means of guide ribs cast in body shell, ensuring accurate seating of disk in act of closing. The working pressure of the Powell Union composite disk valve is limited to the durability of the rubber disk. The general construction and details of the body, bonnet and trimmings are guaranteed to stand a steam pressure up to 150 pounds."

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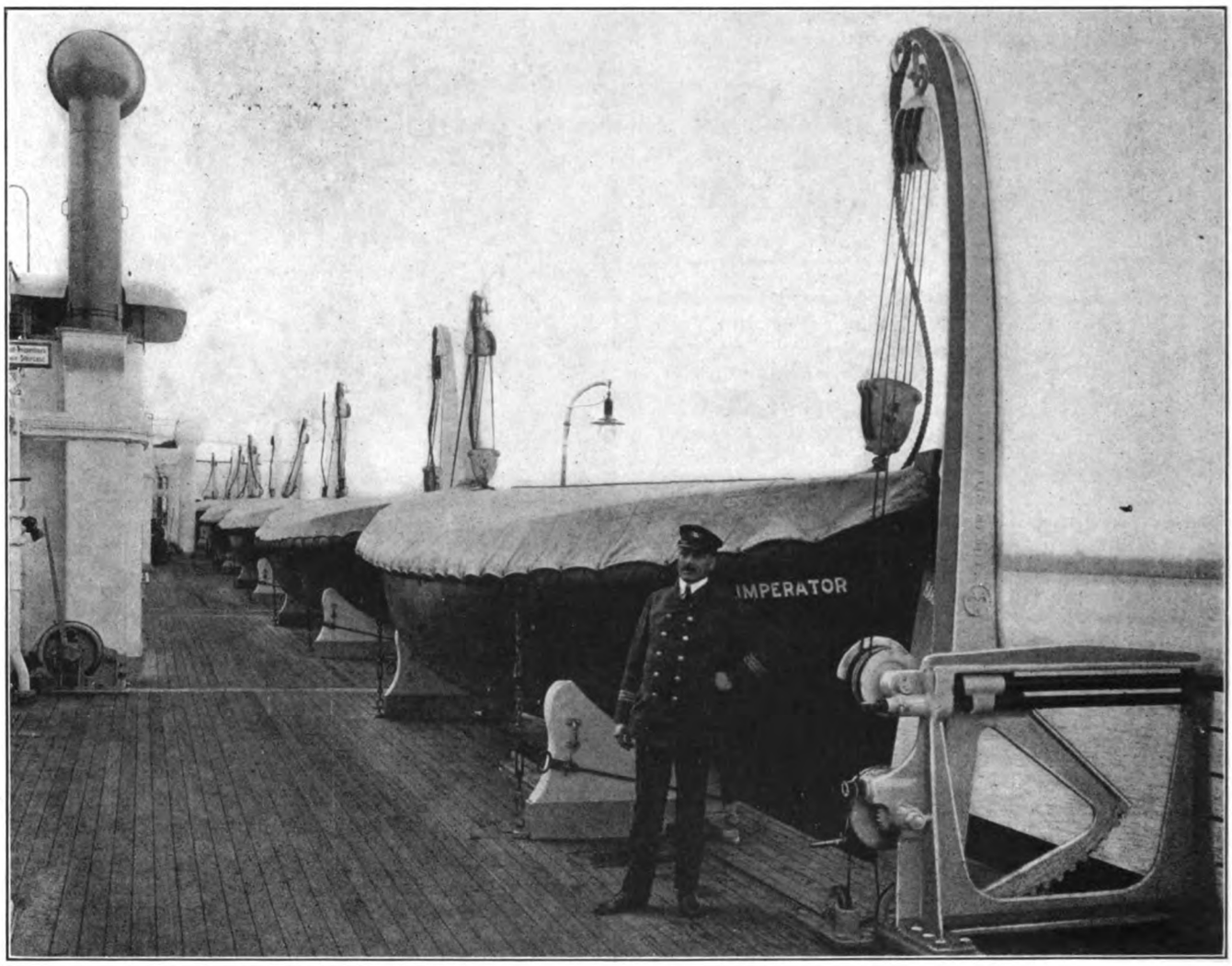
WELIN MARINE EQUIPMENT COMPANY

305 VERNON AVENUE, LONG ISLAND CITY, N. Y.

Safety at sea was the *first* consideration in fitting out the *Imperator*, therefore our quadrant davits were selected.



UPPER DECK SHOWING OUR QUADRANT DAVITS AND HANDLING CONTROL

Standard Metallic & Wooden Lifeboats *A.B.C. Life Preservers*

Lundin Decked Lifeboats *Life Rafts* *Welin Quadrant Davits*

ALL THE BEST

LONDON HOUSE:

The Welin Davit & Engineering Company, 5 Lloyds Avenue

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"Tobin Bronze" is the title of a 32-page booklet published by the American Brass Company, Ansonia, Conn. "We furnish 'Tobin Bronze' in the following forms: Turned and straight pump piston rods and yacht shafting; rolled plates for rudders, centerboards, pump cylinder linings; condenser tube sheets, fin keels and yacht plates, etc.; flat, round, square and hexagonal bars; bars for forgings, boilers and pump linings, bushings, etc."

The Taylor seamless forged steel boiler nozzle, made by the American Spiral Pipe Works, Chicago, Ill., is described in a circular just published by that company. "Forged from a single piece of open-hearth steel without a weld. The safest and most reliable connection between the drum and the piping system. There have been numerous devices for forming the connecting link between the boiler and high-pressure piping, but practically nothing has been produced in keeping with the remainder of the installation, and we believe the use of the Taylor seamless forged steel nozzle is the safest and most reliable connection that can be obtained. The nozzle may be heated and the saddle flange bent to the required circle, with no separate part to become loosened when heated. The saddle flange is of sufficient diameter to enable the use of power riveters for attaching the nozzle."

"Byers' Wrought Iron Pipe" is the subject of a circular just issued by the Bourne-Fuller Company, Cleveland, Ohio. "We recommend Byers' wrought iron pipe because every step in its manufacture, from ore to finished product, is absolutely controlled by the manufacturers; because the pipe is made of the highest grade of wrought iron, refined by puddling the best pig iron, and rolling it into a homogeneous and uniform muck bar and skelp; because no iron or steel scrap is used—only their own pig iron and their own refined iron ever goes into a Byers furnace; because the welding and threading of pipe and couplings are done by the most advanced and accurate methods; because the Byers Company make no 'merchant' or lightweight pipe. It is all guaranteed full weight; because every piece of pipe with its coupling is subjected to a rigid hydrostatic test of 1,500 to 2,000 pounds to the square inch, and thrown out if its shows the slightest defect. Write for prices and booklet, 'The Control of Quality in Every Process.'"

The Columbian Rope Company, Auburn, N. Y., publishes a circular describing its manila rope, which, it is stated, has a long, tough fiber, and can always be trusted. It is said to be especially desirable for towing, rigging and similar marine uses.

"Powell Valves" is the title of a booklet published by the William Powell Company, Cincinnati, Ohio. In the description of the Powell "Union" composite disk valve, the catalogue states: "Observe the bevel ground joint connecting body and bonnet. Red lead or cement is unnecessary to make it tight. Notice the swivel union nut and threads on the outside of the valve body where the steam can't reach them. The valve body outlasts many disks."

TRADE PUBLICATIONS

GREAT BRITAIN

A direct-grip windlass is described in a circular published by Clarke, Chapman & Company, Ltd., Victoria Works, Gateshead-on-Tyne. This is a fully illustrated circular, and all interested in these machines should send for a copy.

The "Clou" Dry Hand Fire Extinguisher, 244 High Holborn, London, W. C., has published some circulars describing this fire extinguishing device, which is stated to be especially valuable for marine use. "Clou fire extinguisher far surpasses any apparatus hitherto invented, by its wonderful combination of powder which had a quintuple effect; by its cone construction, which allows a powerful, regular, wide and distant range of spread; by the simplicity with which it can be handled, even by a child, no knowledge or previous practice being necessary; it is always ready for use; by its property of never failing to act owing to the enormous efficacy of the 'Clou' powder; by the extreme stability of the extinguishing powder, which is affected neither by frost nor heat, for it can be neither frozen nor evaporated; by its perfectly innocuous action, even on the finest and most delicate materials, being easily removable at once without leaving the slightest trace behind; although the best and most efficient, 'Clou' is the cheapest of extinguishing apparatus, the initial cost is the only outlay, fresh powder being supplied gratis after the occurrence of a fire. 'Clou' is of world-wide renown, having been extensively adopted by governing bodies, institutions, theaters, large business establishments, shipping companies, motor companies and others, the accompanying testimonials being the best proof that can be submitted of its efficiency in extinguishing the fiercest fires."

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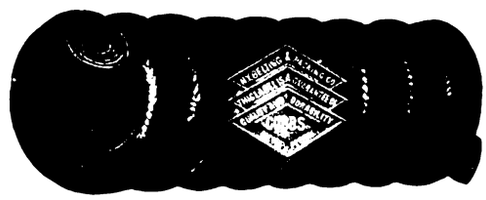
AND

VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

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"Wire Falls for Boat Handling" is the title of Bulletin No. 11, published by the Welin Davit & Engineering Company, Ltd., 5 Lloyds avenue, London, E. C. "That recent disasters should be followed by a drastic overhauling of old regulations relating to boat gear was as natural as it had come to be desirable and necessary, and that committees, boards and other bodies should be constituted to consider the subject in detail was an inevitable corollary. The recommendations of the chi f of these committees, viz., the Board of Trade Departmental Committee on Boats and Davits, were issued some little while back, and though still subject to further and final revision, will, at least, as regards the major portion of their contents, probably become before long absolute regulations. If the recommendations relating to the proportion of boat accommodation be upheld, as they almost certainly will be, there will in consequence be many instances where at least two and possibly even more boats will need to be handled by a single set of davits. The committee fully recognized this, and provided for the contingency by stipulating that in such cases a special lowering and hoisting gear should be employed in conjunction with wire falls. It may, therefore, be not altogether without interest to see what is being done in this matter, and we shall endeavor briefly to indicate the chief points of interest in a large and typical modern wire-fall installation, all the gear for which has been designed and is being manufactured and supplied by the Welin Davit & Engineering Company, Ltd., 5 Lloyd's avenue, London, E. C. The vessel we have selected for review is the *Burgermeister O'Swald,* at present under construction for the Hamburg-America Line at the Weser yard. and it is a matter for some little disconcerting reflection that we should have yet again to go abroad to exemplify the first application of a British company's manufactures and designs. True it is that one set of wire gear of the same make has been ordered for one of the more progressive British companies, but otherwise it has been left to our Teutonic neighbors to take—not without much thoughtful pre-experiment—the first plunge by boldly fitting (as described elsewhere) the *Imperator* throughout with Welin davits, wire-fall controls, adjusters, and so on, and to follow up this eminently satisfactory experiment by placing repeat orders for the two huge sister vessels and for six other steamers of the type here illustrated, while the Forenede Damskibs Selskab, of Copenhagen, are fitting their magnificent new liner throughout in like fashion."

"The Isherwood System" is the title of a pamphlet published by J. W. Isherwood, 4 Lloyd's avenue, London, E. C. "Now that there are 272 vessels, aggregating 1,209,336 gross register tons, built or under construction, and shipbuilders already operating the system, the Isherwood system is so firmly established that it should hardly be necessary to explain that this is a compound system, consisting of heavy transverse frames, widely spaced (say 12 feet apart), such frames being slotted to allow longitudinal frames to be passed through them on the whole skin of the ship; that is to say, these fore and aft frames are fitted at close-spaced intervals under the deck and along the sides and along the bottom of the vessel, with intermediate transverse frames in the double bottom to withstand grounding. The transverse and longitudinal frames are joined together by lugs, thus forming a homogeneous framework complete without the shell plating, but which framework, together with the shell plating, provides a girder absolutely unique so far as ship construction is concerned. The extra strength in he case of a vessel of normal dimensions amounts to about 20 percent in the longitudinal direction, and to something like 5 percent to 10 percent in the transverse direction, whilst there is no doubt that this compound system resists torsional stresses in a manner which has never been provided for in the case of vessels build on the old system. It is well at this point to refer to the fact that a practice has been introduced recently of leaving out stringers in the case of vessels built on the old-fashioned system. This has further tended to reduce the resistance of vessels built on the old system to torsional stresses, besides which there is more liability of the vertical frames showing signs of tripping where there is no support from stringers. Whilst discussing this absolutely invaluable feature of added strength, it may be pointed out vessels of various designs where radical departures have been made in the method of distribution of material developed serious defects and have shown structural weakness. Now those who have traced the career of all the Isherwood ships afloat are in a position to state authoritatively that there has been no case of any serious damage through simple stress of weather in the case of a ship built on the Isherwood system; and, moreover, it is a fact that several of these vessels have been badly aground and come off again with little or no damage, and underwriters will probably find that there will be few, if any, total losses from stranding, because the bottom plating is so much better supported, and the deck is so strong

Save your valves—
Don't send them to the junk pile

We will send a
Dexter Valve Reseating Machine
On thirty days' trial
To all responsible parties.

The operation of the Dexter machine is a simple matter and the job is complete in a few minutes. The work of reseating a valve can be done by an ordinary mechanic without disconnecting the valve from the pipe line, and by the use of the Dexter machine, valves which have been consigned to the junk heap can be put into perfect order to use again when needed. That constant sizzle and drip, which is one of the most annoying and disagreeable conditions where valves are used, can be immediately stopped by applying a Dexter valve reseating machine.

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THE LEAVITT MACHINE CO.

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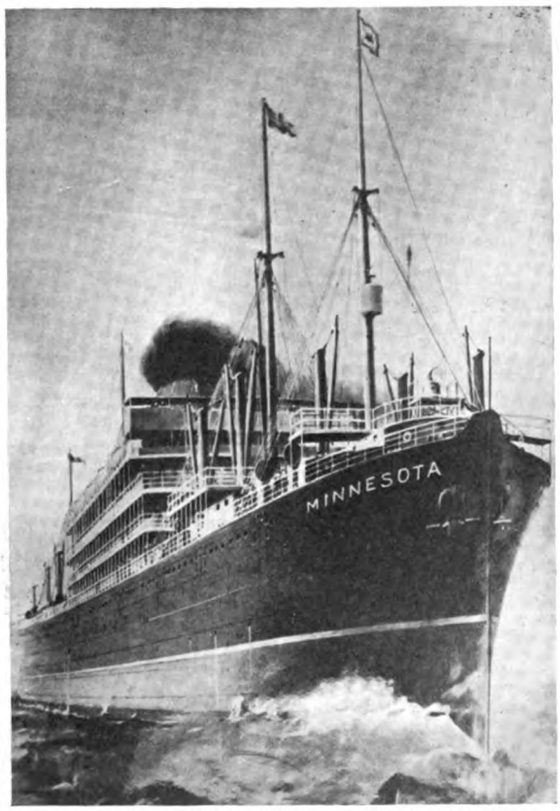
longitudinally that it is very improbable that any ship built on the Isherwood system will break her back."

Accessories, such as non-toppling blocks, gripe gears, boat-lowering capstans, etc., are the subject of Bulletin 15, published by the Welin Davit & Engineering Company, Ltd., 5 Lloyd's avenue, London, E. C. "The various accessories illustrated in this publication are all of standard pattern, and are those usually quoted for. Any reasonable modification, however, can, of course, be made, provided timely notice be given

Dermatine hose and tubing is described by Dermatine Company, Ltd., 93 Neate street, London, S. E., in a catalogue the company has just published. "Dermatine hose for carbonic acid gas is used by some of the principal fire brigades for chemical engines now largely coming into use for dealing with fires promptly at the outset. The lining is made of a special close flexible quality of seamless gray Dermatine, and covered with the best flexible red Dermatine. Guaranteed absolutely reliable for the purpose, and not to perish if kept in use or stock."

The "Vapor" patent scale collector is described by O. N. Beck, 11 Queen Victoria street, London, E. C., in circulars he has just issued. "The advantages of the 'Vapor' collector, for which the fullest guarantee is given, may be summarized as follows: 1. Automatic precipitation of all mineral constituents of the feed water without any chemicals whatsoever, and during working; that is, all the scale-forming substances are rendered insoluble, and are deposited on the apparatus or in the boiler in the form of mud, which is removed by the regular blowing-off of the boiler. Easily soluble salts, such as common salt, remain in solution, and are only precipitated during concentration. The formation of scale of any significance is rendered impossible, so that the cleaning of the boiler becomes an extremely easy and simple matter. 2. Considerable saving of fuel. 3. Greatest saving of the boiler and its mountings, owing to the entire absence of chemicals. 4. Feeding with air-free water, therefore no corrosion. 5. Preheating of the feed water to the normal temperature, ensuring thereby uniform expansion throughout the whole boiler. 6. The 'Vapor' forms a swinging water column within the boiler, having a damping action, so that the noise and the jerks of the feed pipe, and any damage caused thereby to the feed pumps, are obviated. Choking of the feed pipe is guaranteed never to occur. 7. The working mpty of the boiler is rendered absolutely impossible, even in case the feed pumps or return valves fail to operate, as the feeding is effected from the highest point of the boiler."

The subject of cabin boats and davits for life-saving at sea is taken up in Bullein No. 12, issued by the Welin Davit & Engineering Company, Ltd., 5 Lloyd's avenue, London, E. C. Any one interested should send for a copy of this booklet, in which the matter is fully discussed and from which the following quotation is taken: "The new life-saving appliances rules of the Board of Trade require vessels to be equipped with enough boats and rafts to carry all on board, both passengers and crew. This introduces no new element in cargo boats, which always carried sufficient boats on each side of the vessel to accommodate the crew. But it means a great change for passenger steamers, for it has hitherto not been considered commercially possible to equip them with sufficient boats to carry the immense numbers who cross the ocean in them. The new rules are the result of the public agitation after the loss of the *Titanic*, and for good or ill they have to be obeyed. Whether they are necessary is quite another question. However, since the rules have been made, and have the force of law, shipowners and shipbuilders must conform to them, difficult as this may be. So far the solution of the problem has generally been sought in the use of collapsible boats; but these are, at the best, somewhat of a makeshift, and in future vessels quite different arrangements will have to be adopted. Probably there is no naval architect and but few shipbuilders who are not considering the question, and getting out new plans for stowing and launching boats from steamships. To assist the Board of Trade appointed a departmental committee to advise them (*inter alia*) on the most efficient arrangements for stowing boats on steamships, for launching them in an emergency, and for embarking the passengers and crew; and the Board also asked them for any recommendation which would contribute to the safety of life at sea. The gist of these recommendations is that boats should be stowed side by side on the top deck, parallel to the davits and with mechanical appliances to traverse them, so that they may be brought successively under the davits, and that the present ropes and falls should be replaced by less crude appliances. They further favor the use of much larger decked boats, so large indeed that passengers may be accommodated below deck, and battened down during the process of lowering. Naturally, the committee put forward no schemes as to the actual means by which their recommendations were to be carried out. They left those to engineers and shipbuilders, and already several have been devised. Among these are some by the Welin Davit & Engineering Company, Ltd., of Hopetoun House, Lloyd's avenue, London, E. C."



GREAT NORTHERN'S S. S. MINNESOTA
THE LARGEST PASSENGER STEAMER ON THE PACIFIC

EQUIPPED WITH

TERRY TURBINES

FOR LIGHTING AND POWER

Another transition from reciprocating engine to Terry Turbines! Vertical compound engine sets on the Pacific leviathan S. S. *Minnesota*, have made way for Terry Turbine-driven generator sets

WHY?

Because:

1—Each 100 K. W. Terry Turbine set takes up only 46% of the old 75 K. W. engine space, with corresponding reduction of weight.
2—The Terry Turbine's split casing permits opening turbine for inspection without disturbing steam or exhaust connections.
3—The turbine rotor and the generator armature may be easily and separately removed, as shafts are connected by flexible coupling.
4—Ability to operate economically condensing or against back pressure ranging from 10 to 15 pounds.
5—Close regulation on light and power loads, (deck winches and steering gears are electrically driven on this ship).
6—Freedom from vibration.
7—Steam, being absolutely free from oil, can be exhausted into either heaters or low pressure receiver of the main engine.
8—The simplicity and absolute reliability of the Terry set.
9—High initial efficiency maintained without overhauling or repairing.

Terry Turbines are also widely used in marine work for driving boiler feed, condenser circulating and ballast pumps, forced draft blowers, ash ejectors, etc.

Marine Bulletin Ready for You

THE TERRY STEAM TURBINE CO.

Main Office and Works: Hartford, Conn.

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BUSINESS NOTES

AMERICA

THE H. W. JOHNS-MANVILLE COMPANY, Madison avenue and Forty-first street, New York, manufacturer of insulating and non-conducting materials, states that it has received the contract for the pipe-covering material to be used in the new New York municipal building. This contract involves twenty-seven carloads of material.

A SATISFACTORY MARINE GLUE.—L. W. Ferdinand & Company, 201 South street, Boston, Mass., have received the following interesting letter from Mr. Hugh Robinson: "I wish to say that I have always used your Jeffery's marine glue in the construction of motor boats, etc., and have never been able to find another glue which would give the entire satisfaction that it does. In the construction of the hull of the Benoist flying boats, which I designed and built, I always use Jeffery's marine glue exclusively, and they are a marvel of strength and lightness and never leak or take water in the least."

THE TORONTO BRANCH of the Canadian H. W. Johns-Manville Company, Ltd., announces its removal to more spacious quarters at No. 19 Front street, East. This new store and warehouse has a floor area of approximately 35,000 square feet, and is situated in the heart of the wholesale district. In their new quarters this firm will be able to carry a larger stock and have ample space for the display of their complete line of J-M asbestos roofings, packings, pipe coverings, building materials, electrical and railroad supplies, automobile and plumbing specialties, etc. The entire building will be lighted by their well-known Frink and J-M linolite system of lighting, and one room will be used for exhibiting these systems of lighting.

THE CLEVELAND (Ohio) branch of the H. W. Johns-Manville Company has recently been obliged to provide larger quarters for several of its subsidiary offices. The Columbus office and contract department are now located on the ground floor of the new seven-story fireproof Peters Power building, 45 West Long street, with large warehouse facilities half a block distant. The Toledo office and warehouse have been moved to 213 Water street. This office has just completed a pipe covering, stack lining and cork tiling job in the Second National Bank building, Toledo, which possesses many unique features. Other Cleveland branch sub-offices are located in Akron (717 Second National Bank building); Dayton (259 Fourth Street Arcade), and Youngstown (502 Stambaugh building). Resident representatives are stationed at Lima, Massillon, Greenville and other points in Ohio, also at Huntington and Parkersburg, W. Va. Their work is supplemented by a large corps of traveling men. Last, but not least, the Cleveland branch has just closed a long-term lease for another larger warehouse on Front street, which, when remodeled, will give the branch larger and better storage and shipping facilities than ever.

STRENGTH OF ROPE.—Of all the factors that enter into the real strength of rope, quality of raw material is most important. The other factors, such as twist, treatment of fiber during manufacture, number of strands, size of yarns, etc., are of secondary importance. Commercially considered, the quality of the raw material is entirely in the hands of the manufacturer. In discussing this subject, *Plymouth Products* states that "In the case of so-called 'Manila' ropes some have shown 50 percent less strength than honest goods of the same size and type of construction. Since the presence of 'doctored' or poor material in rope would be detected only by an expert, the user must of necessity rely upon the maker's reputation. The various twists used on different ropes vary the tensile strength greatly. A soft-laid rope is much stronger than a hard-laid one. Even in ropes made from the same fiber the difference in strength between the two extremes of extra soft and extra hard-laid will amount to 20 percent or more. While strength is a very important requirement in any rope, it is not always the principal one. The sailmaker, for example, wants his rope extra soft-laid for greater ease in handling. The transmission or hoisting requirement—durability under repeated bending—demands the best quality of fiber but not necessarily the highest tensile strength. Consumers should bear such things in mind when judging comparative strengths of different ropes. Between the ropes of reputable makers the strength will be found to vary very little as a result of the treatment of the fiber during the manufacturing processes. The number of strands, and the size of the yarns likewise, affect the strength only slightly, and the particular construction of a rope in these respects is determined rather by some other requirement of its use."

QUINCY A. SHAW, Prest A. J. GARCEAU, Treas.
A. H. FOLGER, Mgr. R. C. MONTEAGLE, Ass't Mgr & Engineer

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for Reciprocating Engines of *any make*—Marine, Stationary, Steam, Gas, Water, or Ammonia, Vertical or Horizontal
Will Reduce Fuel Bill to a Minimum

Bottle Tight
Practically No Friction
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LESS FUEL INCREASED LESS LABOR EFFICIENCY

SUBMARINE ARMOR AND DIVING APPARATUS

We manufacture and carry a complete stock of
DRESSES, HOSE and REPAIR SUNDRIES
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Write for our prices.

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METAL POLISH

SHI-NUP

A non-explosive, non-settling and non-scratching polish. Contains no acid, gives a brilliant and lasting lustre and dries quickly. Our motto is: "THE BEST FOR THE SMALLEST COST."

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Mixed with oil or grease, the fine flakes go to every part of the bearing, building up a lubricating film of pure, unctuous graphite which prevents metal-on-metal contact, cuts down friction, saves power, and minimizes wear. There can't be a hot bearing where **Dixon's Flake Graphite** is used.

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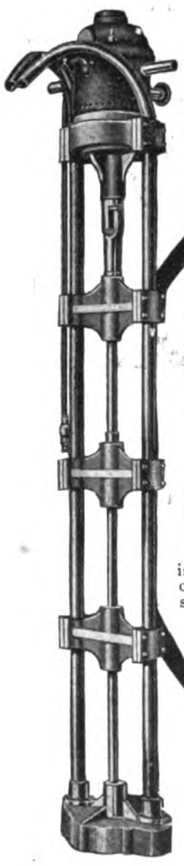

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Send a postal and get, in *boiled-down* form, the story of the greatest pump ever designed—the Edwards *"Electro-Portable."* Just the thing for pumping out *boats, barges, etc.*

Simply attach it to any electric light socket, turn the switch and out comes the water "p.d.q." —100 to 500 gallons per minute, according to size.

Works perfectly from *alternating* or *direct* current. Light and easily set up (our 100-gallon size weighs only 118 pounds—motor and all).

No *valves* of any kind. Can't freeze, for it automatically drains itself.

The Edwards "Electro-Portable"

is made of genuine *brass*—ball-bearing—self-lubricating. Motor attaches to exhaust tubing, thus sustaining its own weight.

No bearing on shaft, hence no wear on *parts.* Used by Louisville & Cincinnati Packet Co. and many other prominent concerns.

Sold at exceptionally low price.

Send postal NOW and get our illustrated descriptive Folder and Prices by RETURN MAIL.

The Edwards Manufacturing Co.

324-344 E. 5th St., Cincinnati, Ohio

Brownhoist buckets and tubs are described in Catlagoue R, just published by the Brown Hoisting Machinery Company, Cleveland, Ohio. "In this catalogue we give descriptions and illustrations of the Brownhoist grab buckets, slag buckets, contractors' grab buckets, shovel buckets, and various kinds of tubs as designed and manufactured by this company. Brownhoist buckets and tubs are being used in practically every part of the world. With this varied line of buckets and tubs we are in a position to solve any bucket or tub problem, no matter what the material may be nor how the bucket is to be handled. We gladly give advice as to what kind of a bucket or tub to use for certain work, and we will submit estimates on receipt of request."

"Triple Tested" is the title of a bulletin just published by the Nelson Valve Company, Chestnut Hill, Philadelphia, Pa. "Twelve leading features of the Nelson gate valve are described on the two pages opposite, but the big feature upon which its successess is founded is the double disk. Instead of a solid tapered wedge to wear, get out of alinement and cause a leak, Nelson double-disk gate valves are provided with two rocking disks which make up tight with any angle, no matter how badly the valve body may be distorted through stresses or the accumulation of sediment. Four lugs cast on each disk enclose a shoulder on the central wedge or valve stem. Turning the hand-wheel to the left lifts the valve stem, which in turn unseats the rocking disks. Reversing the motion, of course, lowers the valve stem, seating the valve by applying pressure to the center of the disks."

"Don'ts for Buyers of Lubricants" is the title of a folder issued by the Albany Lubricating Company, 708 Washington street, New York. Here are two of the "Don'ts" "Don't purchase a lubricant because someone tells you a wonderful tale as to what it did for Tom, Dick or Harry. Find out exactly what it will do for you by testing it. You will be absolutely sure then. Order by test and you will order Albany Grease. Don't purchase ordinary greases that contain acids, resin, resinous oils, lime soaps, talc, etc., and which do not remain permanently neutral, free from acidity. Such greases contain the acids and foreign substances that eat the bearings, gum up, clog and create friction instead of reducing it. Have you ever wondered what the ill-smelling, discolored, hardened mass was that is left in the grease cup after using some ordinary grease? That residue composes the biggest part of ordinary greases."

The cofferdam for the Government ship lock located at Black Rock Harbor is described in illustrated Bulletin No. 103, published by the Lackawanna Steel Company, Lackawanna, N. Y. "This bulletin on the greatest steel sheet piling work ever undertaken describes in minute details every stage of the cofferdam work, from the preliminary piling tests to the pulling of the piling after the completion of the lock. The engineering features of this work, as discussed herein, offer interesting and useful hints to every engineer or contractor who may have occasion to use steel sheet piling. The chapters containing reports on installation and tensile tests under Government supervision further show conclusively why Lackawanna steel sheet piling enjoys unquestioned supremacy where great strength and easy driving are essentials. Altogether this bulletin is important enough to warrant most careful reading, so send your address for a free copy."

"Welding and Cutting Apparatus" is the subject of a 32-page catalogue published by the Alexander C. Milburn Company, 1420 West Baltimore street, street, Md. "The success of the Milburn oxy-acetylene apparatus is due to its simplicity, design and workmanship. Through and through it is built on honor, the same as all Milburn products. The carbide feed and seafety devices are nearly identical with that of the Milburn house machine, which has been examined and tested by the Underwriters' Laboratories, and listed by the consulting engineers of the National Board of Underwriters. The feed is rotary and of the indirect carbide into water type, which makes it impossible to get an excessive charge of carbide, or to feed in any way except through the normal working of the generator. It uses lump carbide, which gives 15 percent more gas than the granulated size. The operation is very simple. A horizontal cylinder within the carbide hopper is revolved by the gas pressure acting upon a strong diaphragm, and thus feeds the carbide. As the gas is used and the pressure falls a weighted lever rotates the cylinder, and feeding a predetermined amount of carbide renews the gas pressure and raises the diaphragm and lever. The feed is sensitive and accurate, and maintains the pressure desired regardless of the amount of gas being used. The gas is washed, cooled and purified as fast as it is made and used."

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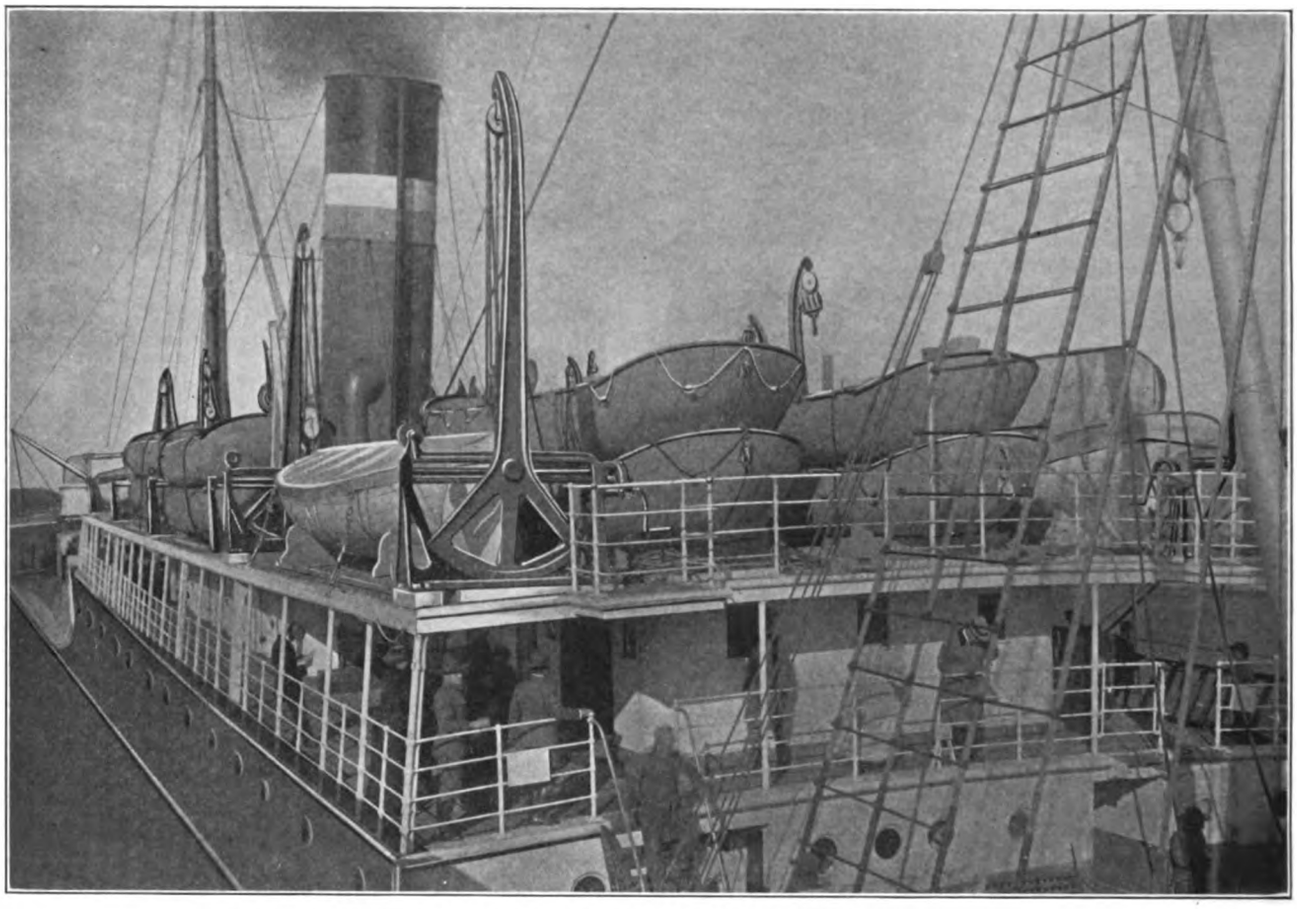
Adopted by the United States Army Transport Service

The "Lundin" system is the only complete system in the world today. The various units comprising this system, viz: Welin Davits, Lundin Decked Lifeboats, Non-Toppling Blocks, Tilting Chocks and Automatic Gripe Release, are respectively the best of their kind on the market, and as here combined form a system giving the highest degree of efficiency, dependability, simplicity and durability.



Boat Deck U. S. Army Transport KILPATRICK.

The installation on the "Kilpatrick," shown above, provides lifeboat accomodation for 1172 persons as compared with 450 persons, the maximum under the old arrangement.

Let us solve your lifeboat problems.

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305 Vernon Avenue, Long Island City, N. Y.

London House; Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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Wolverine motors are described in Catalogue O just issued by the Wolverine Motor Works, Bridgeport, Conn. These motors are used throughout the world for commercial work. The following statement appears in the catalogue: "The name 'Wolverine' applied to a marine engine has always stood for the highest art in marine engineering, and 'Wolverine' engines are to-day recognized as the standard of excellence the world over. A large number of devices necessary to the successful and reliable operation of marine engines are original with the makers of the 'Wolverine.' This engine is the copy of no other design, but is the result of over a quarter of a century of experience and careful attention to every detail in building this class of machinery."

Link-Belt belt conveyors are described in Book No. 79, published by the Link-Belt Company, Philadelphia, Pa. "The Link-Belt Company is recognized as the pioneer in the art of conveying materials, and our various elevating and conveying devices to-day represent the highest development of their individual types. This is as true of the belt conveyor as of link-belt or chain conveyors. For upwards of twenty-five years we have recommended, manufactured and installed large numbers of belt conveyors for uses to which they were adapted, and from our long experience, manufacturing facilities, design of equipment, and quality of belts, has resulted the same superiority that has always characterized our other products."

"The Mechanical Handling of Package Freight at Railroad Terminals and Steamship Piers" is the title of Book No. 94, published by the J. M. Dodge Company, Nicetown, Philadelphia, Pa. The introduction to this book states, "The present congested condition of terminals and the high cost of manual labor have raised the question whether machinery, so successfully used in other lines of work, could not be adapted for handling freight. After a comprehensive study of existing conditions, we answer this question in the following pages, with practical information showing how the installation of suitable machinery cuts down the cost of freight handling by one-half or more, and materially increases the capacity of railroad terminals and steamship piers, thus avoiding the congestion and delays which have been a source of annoyance and expense heretofore. Our engineers are ready to co-operate with you in designing a modern mechanical system. We invite you to submit your conditions."

A catalogue of drawing supplies and engineering instruments, No. 300 M. E., will be sent free to any of our readers upon request by F. Weber & Company, Philadelphia, Pa. A copy should be in the hands of every engineer, draftsman and naval architect. This catalogue contains 280 pages and is profusely illustrated. Sample books of the company's finest drawing papers will also be sent free upon request.

TRADE PUBLICATIONS

GREAT BRITAIN

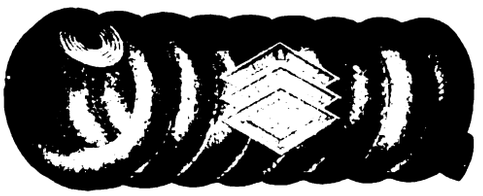
"Halley" fire extinguishing, fumigating and disinfecting apparatus for marine uses is the subject of Bulletin No. 14, issued by the Welin Davit & Engineering Company, Ltd., 5 Lloyds avenue, London, E. C. "The need for a thoroughly reliable machine that can effectively extinguish fires, disinfect and fumigate, in as short and prompt a time as possible (by instantaneous generation and concentration of gas), and at the same time in a practical and inexpensive way, has always been felt. The efforts that have been made to attain this end have been accorded much attention, and machines have been adopted with a rediness proportionate to their adaptability and utility. Most machines employed hitherto, however, have been at the best, though reasonably effective, somewhat clumsy and subject to certain obvious and inherent drawbacks. Consequent upon these defects the whole matter was made the subject of investigation by several boards, government commissions, port authorities and the like, whose findings were unanimous, while at the same time their recommendations were practically identical, *i. e.*, that 80.2 gas was the best and safest medium, and that the only thoroughly efficient method of obtaining this gas was by means of a simple gasifier in which liquid 80.2 could be used. Guided by experience, gathered from tests on board ships, etc., carried out under our own personal supervision, and bearing in mind the disadvantages of the apparatus that burned solid sulphur, we have designed a simple machine which, especially on board ship, has the following advantages: The Halley apparatus can be easily worked, and one of the first considerations in designing it was that in the case of fire it should be simple and quick in action."

COBBS HIGH PRESSURE SPIRAL PISTON

AND

VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

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PITTSBURGH, PA., 420 First Avenue
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"Link-Belt Locomotive Cranes" is the title of a pamphlet published by the Link-Belt Company, Philadelphia, Pa. This company has manufactured and installed revolving locomotive cranes for fifteen years. They have been designed for years in connection with the company's coal storage work. These cranes have not heretofore been advertised by the Link-Belt Company, but the increased demand for them has led the company to direct wider attention to its experience with them and to their superior design and efficiency for a wider range of service.

A continuation of the article describing manila rope and its uses is published in *Plymouth Products*, No 20, issued by the Plymouth Cordage Company, Plymouth, Mass. The following is a part of the article: "In our last issue we described Plymouth manila rope, three-strand—the article we recommend for general work. Among the common uses for rope of this grade and type are a number which, for one reason or another, need a softer lay than that of our regular product. For these several purposes we furnish three-strand ropes of equal quality but made up with appropriate lays and designated by the names that follow: Plymouth Manila Towline. This rope has a medium soft lay; *i. e.*, slightly less twist than Plymouth manila rope, and is the proper article for all heavy towing. Plymouth Manila Steamboat Line is also a medium soft-laid rope and is suitable for docking large vessels. Where the towing or docking requires ropes of 5 inches circumference and upwards it is advisable to use these special goods. The medium soft lay makes them stronger, easier to handle and better fitted to withstand sudden strains. Plymouth Manila Raft Rope is designed to bind logs together while they are being floated to mill. This rope has a soft lay; *i. e.*, a little less twist than towline, and is demanded principally in the 6 and 9-thread sizes."

The shipbuilding and repair plant of the Seattle Construction & Dry Dock Company, Seattle, Wash., is the subject of an illustrated pamphlet just published by that company. "The largest shipbuilding, engineering, construction and repair plant on the Pacific Coast, that of the Seattle Construction & Dry Dock Company, is situated in the city of Seattle, in the busiest part of the city's commercial waterfront. The plant of the Seattle Construction & Dry Dock Company covers 27 acres, and is served directly by five transcontinental railroads—the Oregon-Washington Railroad & Navigation Company, the Northern Pacific, the Great Northern, the Chicago, Milwaukee & Puget Sound, and the Canadian Pacific. The advantages of such a situation for the plant are apparent. Elliott Bay—the harbor of Seattle—opens broadly upon the waters of Puget Sound, and these in turn upon the Straits of Juan de Fuca, extending westward to the Pacific Ocean, the whole forming an enormous harbor unequaled in the world. The entrance to the Straits from the ocean is many miles in width. Frequently large sailing vessels make their way, unaided by tugs, to moorings in the various harbors of the Sound. The broad and open fairway, deep and absolutely unobstructed by bar, reef or shallow, may be followed right up to the dock of the Seattle Construction & Dry Dock Company."

BUSINESS NOTES

GREAT BRITAIN

THE AILSA CRAIG MOTOR COMPANY, Chiswick, London, W., announces that the business of the year 1913 exceeded all of the company's previous records, and that the sales of Ailsa Craig motors and motor boats for the eleven months ending in November more than doubled the horsepower sold in any previous year of the twelve months.

BUSINESS NOTES

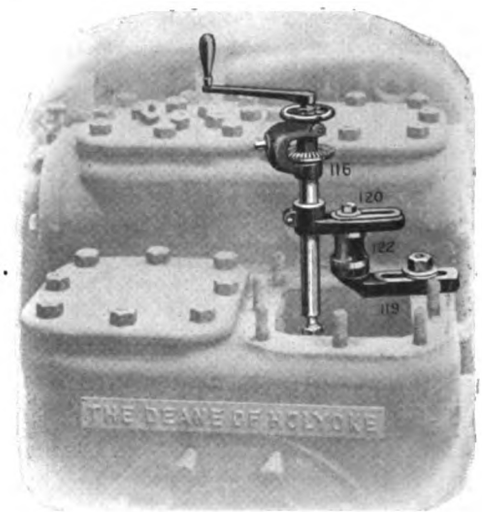
AMERICA

THE AMERICAN ABRASIVE METALS COMPANY, 50 Church street, New York, was awarded a gold medal at the First International Exposition of Safety and Sanitation, recently held in New York, for the company's Feralun safety treads. These safety treads are used extensively on board ship and for other anti-slip surfaces.

THE BIDDLE HARDWARE COMPANY and the SUPPLEE HARDWARE COMPANY, both of Philadelphia, Pa., have consolidated under the name of the Supplee-Biddle Hardware Company. The new concern is incorporated for $1,000,000, and it is stated that it will be the largest wholesale distributing hardware house on the Atalantic coast.

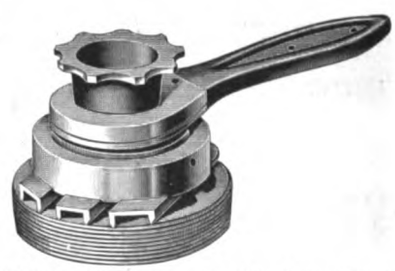
Reface the Seats of Your Pump Valves

with a Dexter Pump Valve Machine and save 50% of the Power Used, by cutting in half the number of strokes. . . . . .



This illustration shows the Dexter Machine recutting valves in water chamber of a Deane Pump.

It will cost you nothing to prove that our machine will do this, for we'll gladly send one on thirty day's trial to any responsible party. . . .



This illustration shows the operation of recutting pump valves in the water chamber of vertical double acting triplex pumps.

Send for Catalog I-16

The Leavitt Machine Co.

ORANGE, MASS.

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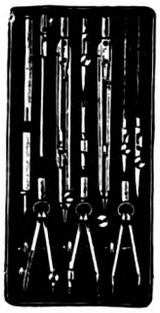
F. WEBER & CO., Philadelphia

Manufacturers and Importers



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Branch Houses: St. Louis Baltimore

FOR FLYING BOATS USE JEFFERY'S MARINE GLUE

Use our Waterproof Liquid Glue, or No. 7 Black, White or Yellow Soft Quality for waterproofing canvas covering of flying boats. It not only waterproofs and preserves the canvas but attaches it to the wood, and with a coat of paint once a year will last as long as the boat. For use in combination with calico or canvas between veneer in diagonal planking, and for waterproofing muslin for wing surfaces.

Send for samples, circulars, directions for use, etc.

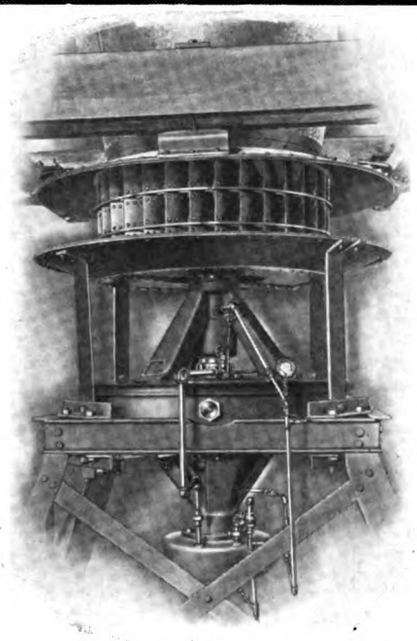
L. W. FERDINAND & CO., 201 South St., Boston, Mass, U. S. A.

THE H. W. JOHNS-MANVILLE COMPANY, Madison avenue and Forty-first street, New York, who are the American builders of the Audiffren-Singrun refrigerating machines, state that this device is especially adapted for use on board ship. "The machine is so simple that as it is arranged for use in this country it is started or stopped by a single motion. There are but two bearings to be oiled. The machine makes less noise than does the motor which drives it. There is no possibility of any explosion due to the action of the machine. As the manufacturers put it: 'If the operator turns on the water and power the machine turns on the cold.'"

COX & STEVENS, naval architects and vessel brokers, 15 William street, New York, announce that their commercial brokerage department is now in charge of Capt. E. W. Bower, who is well known among seafaring people.

J-M EBONY ASBESTOS WOOD has just been placed on the market by the H. W. Johns-Manville Company, Madison avenue and Forty-first street, New York. The company states that this wood is composed of asbestos fiber and other insulating and waterproof materials, and that it is far superior to either slate or marble, having a much higher electrical resistance than either of these, and that it is almost equal in this respect to hard rubber or sheet micre. Another advantage claimed for this material over slate, marble or fiber is the fact that it can be machined almost as easily as ordinary wood.

AMONG THE LATEST PROMINENT STEAMERS in this country that have recently been equipped with the well-known McNab direction indicators are the Chesapeake Steamship Company's new passenger steamers *City of Annapolis* and *City of Richmond,* built at Sparrow's Point. These instruments have also been installed on the eight new vessels of the American-Hawaiian Steamship Company, built at the same yards. McNab direction indicators were also installed on the new steamship *Congress,* of the Pacific Coast Steamship Company, recently completed at Camden, N. J. The above instruments were supplied by the McNab Company, Bridgeport, Conn. The McNab Marine Appliances, Ltd., London, E. C., has recently received an order to equip the transatlantic fleet of the Anchor Line, Glasgow, including the R. M. S. *Cameronia,* R. M. S. *Columbia,* R. M. S. *California,* and R. M. S. *Caledonia,* also the new P. & O. liner *Kaiser-I-Hind,* now completing at Greenock, Scotland, and the six destroyers now building at Cowes, England, for the Chilian navy. It is interesting to note that the inventor, Mr. Alex. McNab, first introduced this instrument in America about three years ago, since that time over three thousand McNab direction indicators are said to have been installed on all classes of vessels throughout the world. The object of this instrument is to show the captain or pilot the actual engine movements in the ahead or astern direction and the speed of the engines, enabling him to see that his order has been properly carried out and placing him in a position to immediately correct errors and avert possible disaster through misunderstanding of engine signals.



Capacity, 25,000 c.f.m., 5" Static Pressure. 1650 R.P.M.

Sturtevant
(REG. U. S. PAT. OFF.)

VERTICAL TURBO FORCED-DRAFT FANS

For Marine Use

This illustration is one of sixteen sets which we have recently built on one order for the United States Torpedo Boat Destroyers, **SMITH, LAMSON, WORDEN** and **MACDONOUGH.**

These fans maintain a 5-inch static pressure in a closed fire room and furnish draft for oil burning. They are self-contained, united with two extra large bearings, and of most rigid construction to take care of strain from excessive pitching and rolling.

Note the solid bucket, one-piece turbine roter. The process of building same is our patent and makes the most durable turbine in the world.

Get in touch with us on all marine forced-draft work. You cannot go wrong on our engineering or apparatus on this work.

Write Our Marine Department

B. F. STURTEVANT CO.
HYDE PARK, BOSTON, MASS.

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NOTICE OF REMOVAL.—On and after Jan. 1, 1914, the general offices and warerooms of the Boston Belting Company will be located at 84 Linden Park street, Boston, near Roxbury Crossing, two blocks from Tremont street and adjacent to the company's factories. With more room and better facilities the company hopes to serve its patrons even more satisfactorily and promptly than has been the case heretofore. All mail should be addressed "Box," Roxbury Crossing Station, Boston, Mass." An office will be maintained by us for the present at Room 602, Columbian National Life Insurance Company's building, 77 Franklin street, Boston.

MARINE REFRIGERATION.—The Brunswick Refrigerating Company, New Brunswick, N. J., reports the following vessels equipped with its apparatus recently: Houseboat *Swordfish,* owned by Schuyler Schieffelin, of New York City, with a ½-ton plant for refrigerating two boxes on board the houseboat. In this case the machine was driven not by a steam engine but by a 2-horsepower electric motor. Steamship *Brazos,* of the New York & Porto Rico Steamship Company. This vessel was equipped with two 4-ton compressors, direct connected to a vertical center-crank steam engine for cooling four large boxes for ship's stores and for water cooling work. The work was done while the vessel was laid up at Erie Basin. This is the second order which this company has placed with the Brunswick Company for plants, the first being for the steamship *Lorenzo.* The United States transport *McClellan.* This vessel is now being equipped with two 6-ton Brunswick plants, driven by motors with chain drives. Steamship *Yumuri,* of the New York & Cuba Mail Steamship Company (Ward Line), a 2-ton plant for ship's stores and ice making was furnished for this vessel. This was the second of the freighters of the above company to be equipped with the Brunswick plants. Steamship *Manzanillo,* of New York & Cuba Mail Steamship Company. Two weeks after the placing of the order for the steamship *Yumuri* the order was placed for the steamship *Manzanillo,* the third of the freighters of this line to be equipped. The plant was practically a duplicate of the one on the steamship *Yumuri. Asiatic Prince,* of the Prince Line. An order has been taken for a 1-ton plant for ship's stores on this vessel to be installed the next time the steamer comes into New York. Besides these steamships orders have been received for two plants for dredges, now being built, which have not yet been named. Full data regarding marine refrigerating plants will be sent to anyone interested upon application to the Brunswick Refrigerating Company, 130 Jersey avenue, New Brunswick, N. J.

A TWO PERCENT DIVIDEND TO EMPLOYEES.—The L. S. Starrett Company, Athol, Mass., under date of Dec. 24, 1913, made the following announcement to its employees: "Last December, after twelve months of steady increase in our sales over the business of the corresponding months of the year before, we took pleasure in notifying you of a vote of the directors to pay to each employee a sum of 2 percent of the total wages paid him during the year, which, for those who had worked here the full year, meant about one week's extra pay. The conditions at this time are somewhat different. The sales for the first six months of the year showed a gratifying gain over the corresponding months of last year, but the business of July and the following months has been less than it was in the corresponding months of last year. The decrease in business the latter part of the year is in keeping with the general depression throughout the country following the change in administration and the passage of a low tariff law, but fortunately we have not felt the effects of this depression nearly so much as many others, especially those in the machine tool line; and, in fact, in spite of somewhat decreased sales we have not been able to bring our stock of goods on hand up to the condition it should be in to meet the heavy demands on it which we are confident the early spring trade will bring. The continued harmony and co-operation between all parts of our organization are very gratifying to us. It is gratifying that this idea is becoming more firmly rooted in the mind of each employee—that Starrett tools must be right, and that everyone of us has his part to do in making and keeping them right; that economy in production and the elimination of waste in material, time and labor are to be constantly striven for; but that the one great essential in the making of Starrett tools is quality. At this Christmas time we wish you all happiness, and take pleasure in informing you that at the meeting of the directors of this company, held the 10th instant, a vote was passed similar to that of last year, namely, that this company pay, as soon after the first day of January, 1914, as practicable to each person in the employ of the company on that date, a sum equal to 2 percent of the entire amount of wages paid to such employee during the year 1913."

QUINCY A. SHAW, Prest A. J. GARCEAU, Treas.
A. H. FOLGER, Mgr. R. C. MONTEAGLE, Ass't Mgr. & Engineer

THE LOCKWOOD MANUFACTURING CO.
Established 1880
IRON WORKS EAST BOSTON, MASS.

The R. C. Monteagle Patent Piston and Piston Valve Packing

for Reciprocating Engines of *any make*—Marine, Stationary, Steam, Gas, Water, or Ammonia, Vertical or Horizontal
Will Reduce Fuel Bill to a Minimum

Bottle Tight
Practically No Friction
Practically No Wear

LESS FUEL INCREASED LESS LABOR EFFICIENCY

SUBMARINE ARMOR AND DIVING APPARATUS

We manufacture and carry a complete stock of DRESSES, HOSE and REPAIR SUNDRIES.

All orders filled the day received.

Write for our prices.

A. SCHRADER'S SON, Inc.
ESTABLISHED 1844
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METAL POLISH

SHI-NUP

A non-explosive, non-settling and non-scratching polish. Contains no acid, gives a brilliant and lasting lustre and dries quickly. Our motto is: "THE BEST FOR THE SMALLEST COST."

HIRSHE MANUFACTURING CO.
65-67 Oliver Street, Boston, Mass., U. S. A.

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TRADE PUBLICATIONS.

AMERICA

A full line of valves is described in a circular issued by McNab & Harlan Manufacturing Company, 55 John street, New York. "To met the demands of the trade and marine engineers for a first-class valve, we have designed and made equipment to produce a full line of regrinding valves. These valves are manufactured under strictly up-to-date methods. Compared with other valves of this type, the workmanship and alinement of all parts are second to none. The metal is of the very best quality steam metal, and selected after careful consideration and chemical and physical tests to be the most satisfactory to give service where conditions require a valve of superior quality."

Exposition in Java.—We received an illustrated booklet describing the proposed holding of a Colonial Exposition in the city of Semarang, Java, Dutch East Indies, in the months of September-November, 1914, to celebrate the centennial of the return of the Dutch East Indies under Dutch rule after political affairs in Europe had been readjusted following the defeat of Napoleon and his banishment to St. Helena. Though we have all heard of Java coffee, and the name of the island in the center of which Semarang is situated is familiar to us, many of our readers will be surprised to hear of the phenomenal growth of the commerce and industries of these colonies during the past few years. The Dutch East Indies, of which Java, Sumatra, Borneo and Celebes are the principal islands, and which, geographically speaking, form a link between the mainland of Asia and Australia, have a population of over 30,000,000 inhabitants, and the chief products are those of the tropical agricultural industries—petroleum, teakwood and tin. In addition to these, gold mines are operated in various parts of the archipelago, and sundry forests products are marketed by the natives of the outlying islands. This exposition should offer splendid opportunities for American manufacturers wishing to introduce their goods in these markets, not only as a possible outlet for machinery adapted for use in the various sugar mills, sundry plantations, machine shops, shipyards, etc., but also for the sale of articles of luxury, as the white population consists of people of means who are liberal buyers.

A "Universal" motor drill is described in a circular issued by the United States Electric Tool Company, Cincinnati, Ohio. "The drill shown here fills a long-felt want, as you can take this drill to any job where the voltage is 110 volts and attach the plug to the lamp socket, whether direct or alternating current. Drill illustrated is of ⅞-inch capacity in steel. The motor is air cooled. Gears run in grease. New type switch. Superior in power to any drill on the market of the same weight."

"Railroad and Industrial Electric Trucks for Package Freight," especially for use on steamship docks and piers, is the name of a 24-page illustrated book just issued by the Elwell-Parker Electric Company, Cleveland, Ohio. "Some years ago, when the Elwell-Parker Electric Company marketed their first storage battery-driven trucks, for handling baggage and freight at railroad stations and in industrial plants, they were looked upon as more or less of a luxury. To-day, however, no railroad station, dock, warehouse or factory is considered complete without one or more of these trucks. This change in sentiment has come as a natural result of the great industrial progress witnessed within the last few years, and the development of Elwell-Parker electric trucks has constituted a very important part in this progress. The immense increase in freight, baggage, express and mail matter being moved by our railroads demanded a proportionate increase of efficiency in its handling, and thus the slow-moving, man-powered hand truck had to gradually give way to the large-capacity, high-speed, electrically-operated trucks of various types now offered by the Elwell-Parker Electric Company to meet all the various conditions of handling freight encountered in modern business. Simultaneously a similar development took place in our great industrial plants, and the necessity for some means to more quickly and efficiently move raw material and finished products within the plant itself became so paramount as to warrant an electrically-operated truck especially designed for this purpose. Thus the creation of the Elwell-Parker Electric Company's industrial type of truck and tractor. The Elwell-Parker Electric Company's trucks, in both the railroad type and industrial type, have the same essential operating features, the same high-grade design and workmanship, and represent the very best value obtainable."

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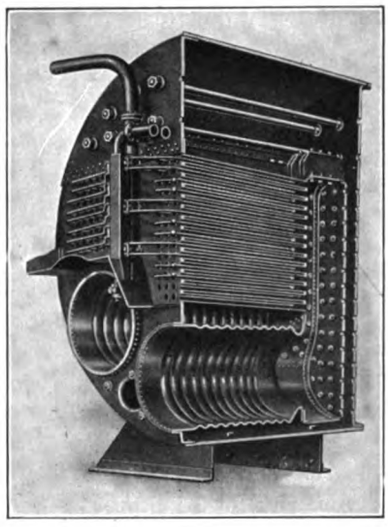

Increases power output of a given marine power plant from 10% to 25%.

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Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

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LOCOMOTIVE SUPERHEATER COMPANY, 30 CHURCH STREET, NEW YORK
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"The Industrial Harbor" is the title of a handsomely illustrated booklet of 152 pages, issued by Neumeyer & Dimond, 82 Beaver street, New York. This catalogue takes up the subject of cranes and transporting appliances for the quick handling of goods in modern harbors. This subject is so important that we quote in full the introduction to the pamphlet, a free copy of which will be sent to any of our readers upon request: "The enormous development of the various industries during the last few years, the continuous growth of the industrial plants, and the alterations in the working methods have naturally caused a much larger consumption of raw material and a great increase in the supply of finished products. In view of the large quantities to be handled, the costs for transport form a very important item and considerably influence the prices of the finished products. It was, therefore, quite natural that wherever it was practicable transport of material by water was chosen, as the freight charges by this means of conveyance were, and are still, much lower than by rail. The necessity of enlarging and modernizing the existing loading and unloading plants at ports and wharves soon arose. To-day very nearly all loading plants at wharves are either already provided with modern lifting appliances, or the advisability of installing up-to-date cranes and other lifting devices is at least under consideration, in order to meet the ever and rapidly-increasing demands. This remarkable development of the industries has been very closely followed by a similar development in the construction of loading plants, modern loading and transporting appliances having been introduced to cope with the enormous quantities in the shortest time and with the exclusion of manual labor as far as possible. While some years ago barges of 20,000 cwts. capacity for transporting materials on rivers and canals were considered to be very large, to-day barges of 70,000-cwt. carrying capacity are not rare any more. Considering the fact that such a huge barge will take in some 3,500 tons of materials, and that the loading and unloading of these barges must be effected in the shortest time possible, one will easily comprehend the enormous development of harbor plants which must have taken place, and which development will certainly continue. In former times the unloading of a barge generally lasted some 18 days, whereas to-day a time of only 4½ days for unloading is mostly called for in the charter-parties. At ports which are insufficiently equipped with cranes and other transporting appliances, the amounts due to demurrage and loss on interest soon exceed the first cost and working expenses resulting from the installation of modern loading appliances. Far-seeing harbor boards and committees are, therefore, spending large amounts of capital in order to improve the existing arrangements and to keep abreast of the time by installing new plants. There is another and very great development, that of the electrical industry, which, within the last few years, has large influenced the introduction and application of mechanically-working lifting appliances for the loading and unloading of large quantities of goods; while the employment of electricity for these devices has been greatly facilitated, since electric current can be had at prices as low as 1d. per unit. Another very important reason for substituting manual labor is the continuous increase in wages, which has rendered profitable working with manual labor alone almost an impossibility. Furthermore, as the dock workers' unions have either forbidden night work, or allow overtime only against very exorbitant rates of remuneration, it was quite essential to introduce auxiliary and mechanical means for handling goods, whereby the authorities of harbors and docks were rendered more independent of the workmen. The rather high purchasing and installing costs of modern harbor equipment ought only to be regarded from the point of view that modern lifting appliances involve only a minimum expense for operation and maintenance—one mechanical lifting device performing the work of a score or more of laborers, and in very much less time. In addition to the advantages mentioned above, which result from the employment of mechanical appliances for loading and unloading of goods, experience has taught us that a very great saving in damage to goods has also been effected. This latter fact is especially applicable in the case of goods in bulk; for instance, coal and coke, etc., the breakage of which—caused by repeated shoveling and shooting—is quite effectively prevented. A further and considerable advantage is obtained in the fact that the situation of the storing places, with reference to the point of arrival of the goods, is now entirely left out of consideration when installing modern loading and unloading plants, seeing that the latter very easily span and bridge over any intervening streets or railway sidings, etc., which may exist. In the following pages we give illustrations of some of the plants which have been designed and built by us, and which have brought about great changes and are

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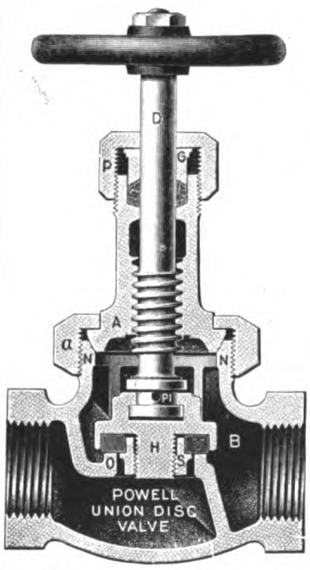

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giving the utmost satisfaction. In concluding, we trust that the numerous harbor plants and various loading appliances illustrated in this book, and which we have supplied to all parts of the world, will provide sufficient evidence of the excellency of the 'Demag' manufacture. Our works are well equipped with the most up-to-date machinery, which ensures the production of only high-class manufactures, and we may say, and with good reason, too, that our firm leads the way in this special and very important branch of engineering."

The "Kenney" marine speedometer is described in illustrated circulars issued by the American Speed Indicator Company, New London, Conn. "Know the revolutions of your engine; which way is the engine turning and how fast; Is it up to speed? Is your signal to the engine room answered correctly? Did the engine start ahead when you rang astern? If the engine is moving, the pointer is indicating that movement. The Kenney shows exactly what the engine is doing, whether moving ahead or astern, and at what speed."

Brownhoist safety crabs and winches are described in Catalogue R published by the Brown Hoisting Machinery Company, Cleveland, Ohio. "The Brownhoist standard crab consists of a straight or capstan barrel mounted on a cast iron frame with the necessary operating gears and shafts. The barrel receives the hoist line of either rope or chain. The crab is equipped with two hand cranks for operating by hand, or with a sprocket wheel for operating by power with either rope or chain drive. This sprocket wheel is furnished instead of the hand cranks without an additional charge. Safe operation of these crabs is assured by the use of Weston's patented safety lowering device, as illustrated and described on page 7. When a more rapid lowering is desired the crab can be fitted with a strap brake, as shown in Fig. 4. There are two speeds of hoist on all Brownhoist crabs except on No. 21. The method of obtaining these two hoist speeds is plainly shown in Fig. 1. The hand crank as shown in this illustration is on the main shaft, which is the high-speed shaft. The low-speed shaft, with reducing gears, is also shown. The crabs can be fitted with different diameters and lengths of barrel than those on the standard crabs given in the table. The crabs can also be equipped with an auxiliary capstan head (see Fig. 3) and with a scored barrel if desired."

"Cyclone" chain hoists are described in a profusely illustrated catalogue of 88 pages issued by the Chisholm & Moore Manufacturing Company, Cleveland, Ohio. A full description is given of this company's high-speed chain hoists, built in ½-ton to 12-ton sizes. "The bearings of the hoist have graphite bronze bushings. They are self-lubricating, they require no oil, and will run indefinitely without cutting. The lift wheel, that is, the sprocket wheel which carries the lift chain, is cast in one piece with the spur wheel that drives it. This double wheel turns freely upon a hollow shaft rigidly supported at both ends in the frame. The spur wheel is encircled by two yokes having internal teeth meshing into the spur wheel teeth and driven with a gyrating movement about it by two double eccentrics placed diametrically opposite. The hand-wheel shaft passes through the hollow main shaft, carrying at the further end a pinion which drives two spur wheels, one on each of the two eccentric shafts. The number of the teeth in the spur wheel, divided by the difference between the number of the spur wheel teeth and the number of the internal teeth of the yoke, equals the number of revolutions of the eccentric necessary to turn the lift wheel once. The teeth are cut with accuracy and work smoothly together. There are a number of them in contact, insuring great strength. The eccentric shafts have bearings at both ends and roller bushed connections with the yokes. The eccentrics are case-hardened steel. Hardened and ground steel bushings are pressed into the malleable iron yokes, and the hardened steel rollers are contained in malleable iron cages. Holes are drilled into the eccentric shafts from the exposed ends, through which grease may be forced to lubricate the roller bearings. No other lubrication is necessary. The other bearings, having graphite bronze bushings, are self-lubricating. There are no overhanging bearings in the hoist, so that under the full load the frame will not spring and bind the working parts. The extreme simplicity and the great strength of this construction is apparent. It is practicable for the larger sizes without undue increase in size and weight. The automatic brake permits the spinning of the hand wheel in either direction when there is no load, locks the load with perfect safety, and yet permits its free lowering by a very slight reverse pull on the hand chain."

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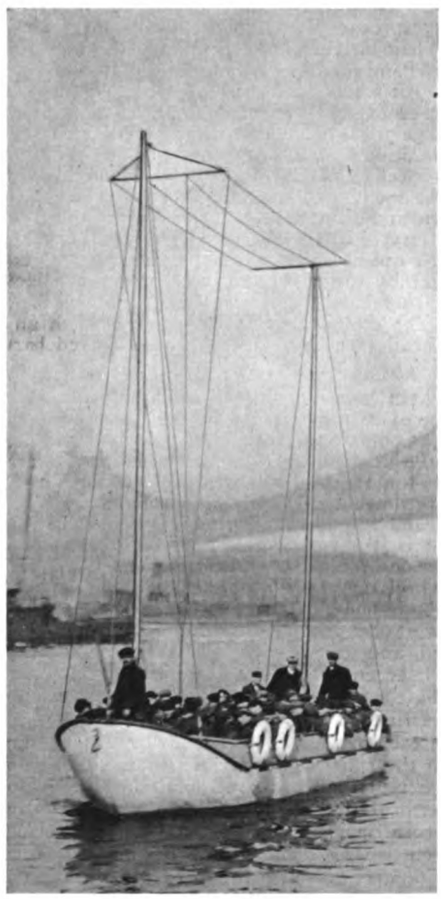
The "Lundin" system is the only complete system in the world today. The various units comprising this system, viz.: Lundin Decked Life Boats, Lundin Power Life Boats, Standard Open Life Boats, Welin Davits, Non-Toppling Blocks, Lundin Davit Falls, Tilting Chocks and Automatic Gripe Release, are respectively the best of their kind on the market, and, as here combined, form a system giving the highest degree of efficiency, dependability, simplicity and durability.



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5. It is provided with means for towing other life boats and keeping them together.

6. It is equipped with a line carrying gun to enable it to establish a connection from a stranded ship to the shore or to rescue ships.

7. It is equipped with a thoroughly protected Marconi wireless outfit of wide radius.

8. Engine of a thoroughly up-to-date type is installed.

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"A System of Steam Turbines" is the title of a book just issued by the Kerr Turbine Company, Wellsville, N. Y. From this book the following extract is taken: "A well-known steam turbine engineer stated only a few years ago: 'The time will come when steam turbine design will become standardized, when practically all builders will make one type, and, just as the Corliss engine stands among engine builders, this type of turbine will stand among turbine designers. The multi-pressure stage or multi-cellular type is the one to which I refer.' His prediction has come to pass, in Europe at least, for practically every builder on the Continent is now confining his design to this type. Another well-known American engineer, writing along the lines of European practice, puts it as follows: 'In the very largest sizes any difference that may exist between the various types can be detected only with difficulty, if at all, but in the medium sizes, that is, up to 3,000 kilowatts, the multi-cellular, or multi-pressure impulse turbine, in some cases fitted with velocity stages in the first pressure stage, has been found the most efficient by quite an appreciable margin.' Four or five years ago when European engineers were turning to the pressure-stage turbine so generally, American engineers in the employ of the Kerr Turbine Company also decided to manufacture this type of machine. The original Kerr turbine was a crude form of pressure-stage turbine, but the Pelton type of buckets used gave such poor efficiencies that it was necessary to make a radical change in design. * * * In the manufacture of 'Economy' turbines standardization of parts is carried on to such an extent, that with the exception of the diaphragms all parts are made in batches, which, after rigid inspection, are passed into a stock room for future use. Then upon receipt of an order, the diaphragms are made up with vanes specially arranged to meet the steam conditions, while stock bearings, bucket wheels, etc., are being assembled for the rest of the machine. Quite naturally this system permits prompt shipment and enables a customer to replace a part at any time on short notice. An example: Recently a prominent builder had to deliver a pumping set within ten days or be penalized. He needed a 250-horsepower turbine for driving, and it took the 'Economy' system of standardization to save the day. The turbine was assembled, tested and shipped in perfect order within the time limit."

A patented automatic ship's bell clock outfit is described in a circular published by the Chelsea Clock Company, 16 State street, Boston, Mass. "On yachts the small 'Chelsea' ship's bell clock may be located in the cabin, pilot house, etc., and operates the big bell (sizes are 5¾ inches, 6¾ inches, 8½ inches and 10¼ inches) located forward outside. In case of fog, etc., by special push button, the bell may be rung continuously, and, as at night, if so desired, the striking on big bell may be omitted. In steamship offices and specialty stores, etc., the clock may be in the office and the bell may be located over the outside door, etc."

"You can reface the valves in your pumps without dismantling" is the statement made regarding the Dexter pump valve reseating machine in Catalogue I-16, published by the Leavitt Machine Company, Orange, Mass. "The new Dexter pump valve reseating machine can be quickly and easily attached for recutting the seats in the water valve chamber in all types of duplex, triplex and single-cylinder plunger, boiler feed, feed-water, underwriter, mine and general service pumps. The valve seat is accurately recut in a few minutes' time, making an absolutely tight valve that will add greatly to the efficiency of your pumps. The saving of power alone will quickly pay for the outfit. These outfits are the result of over twenty years' experience of valve reseating specialists, and are the greatest of all successful tools we have designed for reseating valves."

Almy sectional watertube boilers are described in a completely-illustrated catalogue of 78 pages just issued by the Almy Water Tube Boiler Company, 178 Allen's avenue, Providence, R. I. In the back of this catalogue is a long list of steam vessels of all kinds which have been fitted with Almy sectional watertube boilers, and there are also about 500 pictures of various vessels which have been equipped with Almy boilers. "The Almy patent sectional watertube boiler was designed to embrace the following essential features: Simple construction, perfect circulation, large combustion chamber, greatest amount of heating surface possible in firebox, latest and most efficient method of separating steam from water, water in sufficient quantity to prevent excessive fluctuation, mud-drum to receive precipitation, expansion provided for every part, accessibility of all parts for cleaning and repairs, small space required, non-explosibility, light weight, strength and durability."

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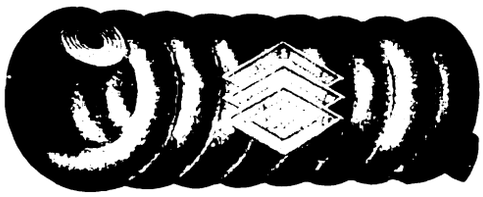

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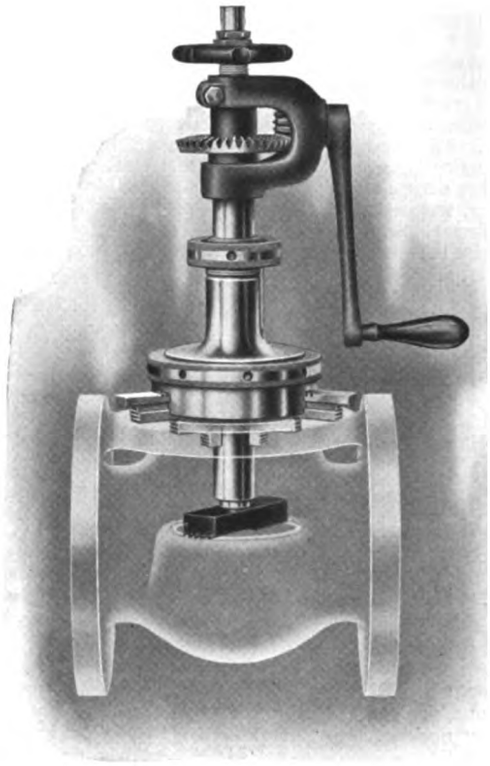
"The Industrial Truck as a Factor in the Efficient Handling of Internal Freight" is the title of an address by W. W. White, read before the Electric Vehicle Association of America at its monthly meeting in New York, Nov. 25, 1913. This address is now republished in book form, and all of those interested in the economical and efficient handling of freight at steamship docks and piers should send for a copy.

The new edition of *The Simplex Manual*, published by the Simplex Wire & Cable Company, Boston, Mass., is ready for distribution to anyone who asks for it. The 92 pages are full of tables and other information of all sorts about insulated conductors and other matters electrical, and are served by a very complete index. Printed on a fine, thin paper, and bound with stiff covers, this booklet "just fits the pocket." Every electrical man having anything to do with wiring problems needs a copy.

"Lackawanna Steel Sheet Piling" is the subject of the handsomely printed and illustrated Bulletin No. 106 issued by the Lackawanna Steel Company, Lackawanna, N. Y. "Lackawanna steel sheet piling has thoroughly proven its supremacy in repeated installations by the United States Government (including the two largest cofferdams on record), by foreign governments and by leading engineers and contractors everywhere. Our type of steel sheet piling has been developed theoretically under the direction of the inventors and an able engineering staff, and has been brought to a high state of mechanical efficiency in mills which have long enjoyed an enviable reputation for the quality of their entire output. In asking perusal of this and our other bulletins, we wish to impress upon present and prospective customers our eagerness to co-operate in every reasonable way to assure satisfactory service to the purchaser. We maintain a steel sheet piling engineering department to furnish reports, suggestions and tentative plans to assist in the correct and economical use of Lackawanna steel sheet piling in the many forms of construction for which it is especially adapted. The experience of our engineers, and the records obtained through connection with a great number of steel sheet piling installations, large and small, are entirely at the service of the purchasers of Lackawanna steel sheet piling. If we fail in our literature to explain clearly; if you wish to know where Lackawanna steel sheet piling has been used in your vicinity, or under conditions similar to your own; or if you desire help and an estimate on some particular installation, write to us. Our advice, though free, will prove valuable."

A return-flow turbine is the subject of Bulletin No. 17 issued by the Terry Steam Turbine Company, Hartford, Conn. "In the development of the 'Return-Flow' turbine the aim has been to attain the best possible design as to elements used and successful mechanical operation. All known designs were considered and analyzed with this end in view. The cost of manufacture has been held strictly secondary to obtaining high operating efficiency, long life and accessibility. It is well known that by velocity staging a given range of expansion can be covered by a very few stages as compared to the number required by pressure staging (approximately as the square root; that is, where 16 pressure stages are necessary only 4 velocity stages would be used). For the average condensing steam and vacuum conditions considerably over 20 pressure stages should be used, which is impracticable for structural reasons. Pressure staging is a most efficient method of extracting the energy available in the expansion range below the atmosphere, providing a sufficiently large number of pressure stages can be used. Velocity staging is most satisfactory for the upper range of expansion, from boiler pressure to atmosphere, and it requires but small space, as only one rotor is necessary. Putting aside manufacturing cost, we find that the best possible result is to be obtained by combining the two types, each working within its range above mentioned, and each well known for its efficiency within its range. As but one rotor is required for the high-pressure velocity stage elements, ample room is left, within a practical over-all length, for almost twice as many pressure stages in the low-pressure end as would be possible if the machine were of the pressure stage design right through. An efficient low-pressure element is a most necessary requirement for maximum total economy, as almost half of the power obtainable from the steam lies in the expansion from atmospheric pressure down to the vacuum. This design is also particularly well adapted to low and mixed pressure work. That this combined design will soon become standard for all condensing units of any size is inevitable. There is evidence of this in the more recent large central station units in this country, and it is already universal practice abroad where highest efficiencies are demanded."



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LAST LONGEST

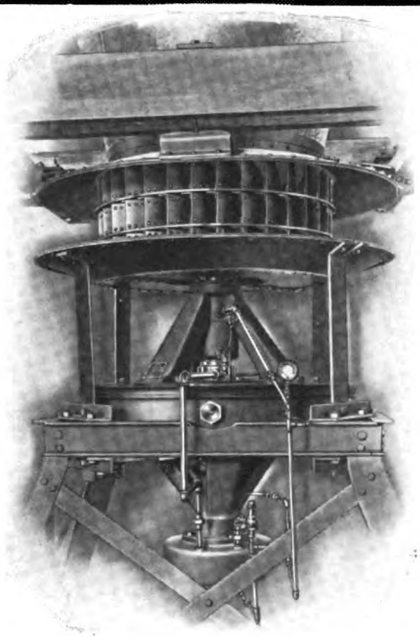
Alberger "Spiraflo" surface condensers are the subject of Bulletin No. 18, published by the Alberger Pump & Condenser Company, 140 Cedar street, New York. "There is herein described a surface condenser embodying the first radical improvements that have been made since the days of Watt."

"Deterioration in Rope from Mechanical Injury" is one of the articles published in the February issue of *Plymouth Porducts*, issued by the Plymouth Cordage Company, North Plymouth, Mass. Users of ropes and cables should write for a free copy of this issue of *Plymouth Products*.

"National Reamed and Drifted Pipe" is the subject of the latest pipe bulletin published by the National Tube Company, Pittsburg, Pa. A copy of this bulletin should be in the hands of every one of our readers, and one will be sent free to each of them upon request. "This bulletin contains a complete description of this product, together with a short introduction explaining the process of well drilling and information relative to the various accessories necessary for the drilling and pumping of wells."

Light service drop-forged "C" clamps are among the drop-forged clamps described in a circular just issued by J. H. Williams & Company, 63 Richards street, Brooklyn, N. Y. "The Williams 'Light Service' clamp, in design and utility, is best adapted for use in the boundless wood and metal, etc., manufacturing fields which do not demand the extremes of strength and service for which the 'Vulcan' and 'Agrippa' clamps provide. Drop-forged from special steel, toughened by special treatment, lighter in weight than various forms of cast clamps, and equipped with a rapidly-moving wrought steel screw, the Williams 'Light Service' clamp is a worthy substitute for tools less dependable and more costly. Tools designed for specific classes of work provide for both convenience and economy."

"History of the Trade Mark 'Yale'" is the title of a 74-page book just issued by the Yale & Towne Manufacturing Company, 9 East Fortieth street, New York. A copy of this book will be sent free to any of our readers upon request. "So many cases develop, from time to time, involving encroachment upon our legal rights in trade marks, catalogue numbers, distinctive designs, and other indicia of the origin of our numerous products, as to make expedient the issue of this record of cases in which our rights have been sustained and confirmed, either by adjudication, by default or by confession. The purpose in view is one both of enlightenment and of warning; of enlightment for those who may be ignorant of the law governing the rights in question, and of warning to those who hereafter, wittingly or unwittingly, may encroach upon our legal rights, that we shall in every case vigorously seek to protect them. To those who sincerely desire to obey the Golden Rule, and to understand what this implies in trade-mark matters, this record will prove enlightening and helpful."



Capacity, 25,000 c.f.m., 5" Static Pressure. 1650 R.P.M.

Sturtevant
(REG. U. S. PAT. OFF.)

VERTICAL TURBO FORCED-DRAFT FANS

For Marine Use

This illustration is one of sixteen sets which we have recently built on one order for the United States Torpedo Boat Destroyers, **SMITH, LAMSON, WORDEN** and **MACDONOUGH.**

These fans maintain a 5-inch static pressure in a closed fire room and furnish draft for oil burning. They are self-contained, united with two extra large bearings, and of most rigid construction to take care of strain from excessive pitching and rolling.

Note the solid bucket, one-piece turbine roter. The process of building same is our patent and makes the most durable turbine in the world.

Get in touch with us on all marine forced-draft work. You cannot go wrong on our engineering or apparatus on this work.

Write Our Marine Department

B. F. STURTEVANT CO.
HYDE PARK, BOSTON, MASS.

Offices in All Principal Cities

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Original from UNIVERSITY OF MICHIGAN

"Difficult Drilling and Boring Made Easy" is the title of a 32-page catalogue just published by Pawling & Harnischfeger Company, Milwaukee, Wis. "The purpose of this booklet is to place facts before you. There is no theory in the following pages, no prophecy—just photographs of actual work done and descriptions that prove how quickly, efficiently and economically Pawling & Harnischfeger horizontal drilling and boring machines will handle work that is practically imposible for any other machine costing no more than a 'P & H.' These photos are of vital interest to you, since each represents actual work done and adds another step toward difficult drilling and boring made easy."

BUSINESS NOTES

AMERICA

The C & C Electric & Manufacturing Company, Garwood, N. J., has appointed Mr. F. A. Saylor agent for the southern part of the State of Ohio, with offices in the Greenwood building, Sixth and Vine streets, Cincinnati, Ohio.

The De Laval Steam Turbine Company, Trenton, N. J., announces that Mr. S. Wolff, formerly manager of the Cleveland office of the Allis-Chambers Manufacturing Company, has been appointed Chicago manager for the De Laval Steam Turbine Company, with offices in the People's Gas building.

The Electric Launch Company, Bayonne, N. J., will hereafter be known as The Elco Company, remaining under the same ownership and management. The company will continue to design and build all types of motor boats and motor yachts, equipped with gasoline, heavy oil engines and electric power for pleasure and commercial uses.

New Marine Oil Engine.—The Standard Motor Construction Company, Jersey City, N. J., announces a new development in addition to its well-known marine gasoline engine as follows: "With the approach of spring and summer and the usual expected announcement of an increase in the price of gasoline for use in automobile and marine gasoline engines, due to the ever-increasing demand, this announcement comes as a great relief to the motor boat user. The Standard company has now placed on the market an oil engine which will burn kerosene perfectly, without odor, with the same wonderful flexibility and control as is had in the modern gasoline engine, and, above all, with no increase in first cost for the engine. The Diesel engines, even with the immense notoriety and capital behind them, have had very little support with the public as far as the small motor engine business is concerned. This is undoubtedly due to the fact that a very small proportion of the engines are used enough hours in the course of a year to make a saving in fuel which would offset the increased interest on first cost of the investment, depreciation, etc. The average small owner does not go into the matter so scientifically, but at a glance, of course, the gasoline engine was seen to be cheaper than the high-priced oil engines that have been offered upon the market in the past. But the advent of an oil engine at the same first cost as that of gasoline engines, but burning kerosene at .06 cents or .07 cents a gallon, widens the scope of the marine engine in yacht work and in the working boat throughout the country. It comes as a relief to the present users of marine oil engines everywhere. It remains, of course, for one of the oldest concerns in the business to bring about this development, as years of continuous study were given to the subject before putting the machine actually upon the market. The cost of the machine must compare favorably with the gasoline engine to meet the demands of the public. It must have all the necessary features, such as low fuel consumption, low first cost, no more care or attendance required than the ordinary engine, no more lubricating oil or cleaning necessary than the ordinary gasoline engine; also a machine that will run steadily at all speeds and loads with the flexibility immediately at hand of quick acceleration, etc. The regular Standard tables of dimensions and sizes of all engines may be used for the Standard oil engine, and the regular price list and discounts apply to it. The Standard company announced the Standard oil engine during the New York Motor Boat Show and sold one a few hours later. So confident are the builders of the success of this machine that they are already constructing, to operate the factory, two large direct-connected Standard oil engines for this service."

IMPORTANT ISSUES TO COME

JUNE NUMBER

This will be our Sixth Annual Dredge Number. Our Dredge Numbers have become an important institution, as they contain the most valuable contributions made during the year to dredging literature.

NOVEMBER NUMBER

This will be our Fifth Annual Shallow Draft Boat Number. The fact that copies of this issue are asked for from all parts of the world, even from the waters of Central Africa and the rivers of the interior of South America, as well as from other countries, show the great importance of this issue.

Advertising Spaces Are Now Being Reserved.

INTERNATIONAL MARINE ENGINEERING

17 Battery Place, New York, and 31 Christopher St., Finsbury Sq., London, E. C.

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The Ashton Valve Company, Boston, Mass., announces that Mr. Charles W. Buckelew has been appointed manager of its New York office at 128 Liberty street.

The C & C Electric & Manufacturing Company, Garwood, N. J., has discontinued its Pittsburg office, and this territory will now be taken care of by the company's Philadelphia manager, Mr. J. C. Chamberlain.

The Kerr Turbine Company, Wellsville, N. Y., announces that on Jan. 1 its Southern interests were placed in the hands of the International Steam Engineering Company, with main office in the Grant building, Atlanta, and branches in the Realty Trust building, Charlotte, N. C., and Brown-Marx building, Birmingham, Ala. James E. Weinbold will give personal attention to new business in territory including North and South Carolina and Eastern Tennessee; Robert Stevens to Mississippi and Alabama, and W. R. Jennison to all other Southern territory.

The 1914 Sales Convention of the American Blower Company was held in Detroit, Jan. 28, 29 and 30, and was attended by fifty of the company's sales and engineering representatives. The annual banquet was held at the Cadillac Hotel. Business sessions were held both at the hotel and the company's home offices. Many important and interesting subjects were discussed and decided upon. Contrary to expectations, pessimism had no place whatever during any part of the convention, and everybody left having a very optomistic view for even more and better business for 1914 than was booked during the previous year.

An Easy Way to Earn Five Dollars.—The Plymouth Cordage Company, North Plymouth, Mass., makes the following announcement: "Send us a picture suitable for our advertising, showing Plymouth rope in actual use, or some scene connected with its sale—such as a window display—and we will send you a five-dollar gold piece. To answer our purpose the picture must show Plymouth rope, must be clear, and must be accompanied by a description. Pictures should measure not less than 4 inches by 5 inches, and be printed on glossy paper. Address Advertising Department, Plymouth Cordage Company, North Plymouth, Mass., and mention International Marine Engineering."

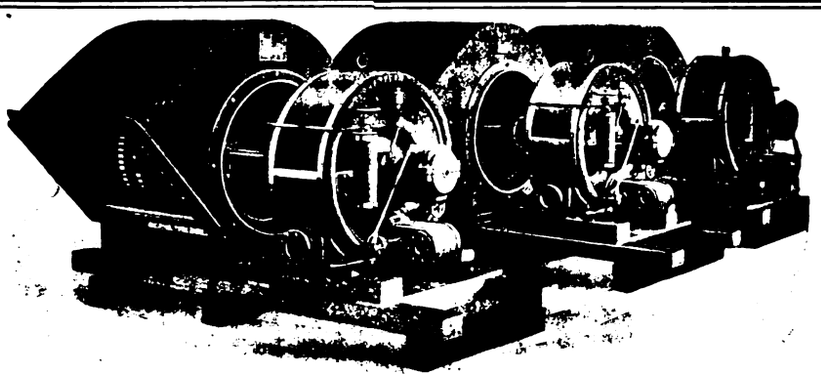
The New London Ship & Engine Company, Groton, Conn., announces that it will exhibit a 180-horsepower, six-cylinder, four-cycle, heavy oil engine at the Tenth Annual National Motor Boat Show, which will be held at Madison Square Garden, New York City, from Jan. 31 to Feb. 7, inclusive. The exhibit will be located in Space "C," Dept. "A," and inspection of the engine is solicited.

TRADE PUBLICATIONS

GREAT BRITAIN

Pressed steel ships' ventilators are described in an illustrated price list published by Harry Cocks & Company, Bute Docks, Cardiff, Wales. "We have pleasure in introducing to your notice our latest improved machine-made ventilators, the only article of its kind on the market. Being pressed in dies, produced with two seams only, the shape is uniform and the strength of material undiminished, which is not the case with ventilators made in the sectional methods. By reason of the fact that the special machinery will not press any material lighter than 16 gage, buyers are assured of obtaining a strong, heavy and lasting article, and we confidently recommend these ventilators as the cheapest and strongest on the market. We shall esteem the favor of your inquiries and shall be glad at any time to submit a sample cowl."

Hamilton's patent deck flange is described in a circular issued by A. Hamilton & Sons, 13 Bute Crescent, Docks, Cardiff, Wales. The manufacturer of this flange desires to secure agents in the United States, France, Italy, Spain, Belgium, Holland, Japan, South America and the British Colonies. The advantages of the flange are stated to be as follows: "Prevents the cable from cutting into the hawse-pipe at a place where the wear takes place, and in many instances causes the pipe to be condemned. Therefore by fitting this invention of ours, the cable chain is prevented from coming into contact with the hawse-pipe at a place where it proves to be so destructive during its passage to and from the windlass. This in itself should demand an article of this description to be fitted, as it prolongs both the life of the hawse-pipe and



Terry Turbines

are ideal for forced draft work and have been widely adopted by the United States and foreign navies for this service. One of the latest installations to be placed in service is that made for the Chinese navy. Terry Turbines drive the

Forced Draft Sets

On the new cruiser "FEI HUNG"

Each set, as shown in the above illustration, has a capacity of 30,000 cubic feet per minute against 3 inches static pressure. Terry sets are light, compact and free from vibration. They have made excellent records for long continuous runs without requiring repairs or adjustments.

Terry Forced Draft sets are made in horizontal and vertical types. In the vertical sets the turbine is built with extended shaft to receive the fan and the whole unit is mounted on I beams extended from deck or bulkhead.

For complete description of this boat see the January number of INTERNATIONAL MARINE ENGINEERING, pages 26 and 27.

Our Marine Bulletin will tell you more about these sets, and the "Return Flow" bulletin about condensing turbines. You should have both of these.

THE TERRY STEAM TURBINE CO.,

Main Office and Works: HARTFORD, CONN.

AGENCIES IN ALL PRINCIPAL CITIES.

British Agents for Marine Forced Draft Sets. Yarrow & Co., Ltd., Scotstoun, Glasgow. (T-112)

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cable chain and also adds great assistance to the windlass while performing its duties. Our patent hawse-pipe deck flange when once fitted will last as long as the life of the ship, as it is subject to no wear and tear whatsoever. The only place where wear is likely to take place is the roller, which can be renewed at a very small cost, and in a short space of time. This patent hawse-pipe deck flange can be fitted to any hawse-pipe now in use, and does away with a great amount of friction, which, of course, means less wear to all parts, consequently a great expense saved in repairs."

"Life Saving at Sea," a reprint of a paper by Axel Welin, read before the Royal Society of Arts in May, 1913, is published in pamphlet form by the Welin Davit & Engineering Company, Ltd., 5 Lloyds avenue, London, E. C. This article begins as follows: "The question of life-saving at sea has been prominent in the minds of most people connected with ships and shipbuilding during the last twelve months, and a thousand brains are at the present time working on the solution of problems connected with this subject. So far, however, no unanimity of opinion seems to have been reached beyond a general agreement as to the insufficiency of present practice. Whether the forthcoming International Conference will be able to detect and agree upon some really satisfactory method of dealing with this perplexing subject yet remains to be seen. Meanwhile, the authorities in most countries are exerting themselves to get to the root of the matter by collecting evidence from experienced persons, by sifting the innumerable projects and inventions which have been pouring in from every quarter of the globe, and by carrying out experiments of the most searching nature. In this they are receiving the hearty co-operation of many prominent shipowners, who, generally speaking, have given ample proof of their anxiety to do everything within reason to safeguard the lives entrusted to their care."

The "Incanto" oxy-acetylene (low-pressure) system of metal cutting and fusion welding is described in a catalogue issued by Thorne & Hoddle Acetylene Company, Ltd., 151 Victoria street, Westminster, London. "The 'Incanto' low-pressure system of oxy-acetylene welding and cutting affords to engineers the most powerful and valuable method yet discovered of dealing simply and economically with an immense variety of metallurgical operations which have hitherto been carried out under less favorable conditions. Acetylene (C^2H^2) is nearly as heavy as air, its density being 13 where air is taken at 15. It is an endothermic gas, which is decomposed at the moment of combustion into its elements carbon and hydrogen, and by this decomposition alone about 300 British thermal units are generated per cubic foot of gas. The remaining heat is furnished mainly by the combustion in oxygen of the carbon into carbon dioxide, and in a lesser degree by the combustion of hydrogen into water vapor, the total heat generated per cubic foot of acetylene being about 1,500 British thermal units. Theoretically, 2½ volumes of oxygen are required for the complete combustion of 1 volume acetylene. In practice, however, with the oxy-acetylene blowpipe it is found that the best welding results are obtained with consumption given on page 7. The flame thus produced has in its center a small white cone, at the apex of which the temperature is about 6,300 degrees F. This flame consists almost entirely of carbon monoxide, which is being converted at its extremity into carbon dioxide. Round the flame is a relatively cool jacket of hydrogen, which, not being able to combine with oxygen at the very high temperature in the immediate neighborhood of the flame, remains temporarily in the free state, and thus protects the inner zone from loss of heat whilst excluding the possibility of oxidation, which is a difficulty other methods of welding have to contend with. Autogenous welds can therefore be effected by means of the oxy-acetylene blowpipe without any deleterious effect upon the metal. The heat, in addition to being greater than that obtainable from any other blowpipe system, is also more concentrated, whilst the flame, being luminous, and in the form of a short, steady jet, very little practice is required to make an unskilled workman proficient in the manipulation of the blowpipe. The acetylene is supplied by means of our patent 'Incanto' generator, pattern B, with purifier. In our patent blowpipes we employ the injector principle, and they are very carefully designed and proportioned to meet all the special conditions with which an oxy-acetylene blowpipe must comply. They are perfectly safe for use, being constructed, even in the largest sizes, so that the flame cannot strike back. The gases are well mixed in the injector chamber before they issue from the nozzle of the blowpipe, and the nozzle itself is so constructed that carbonaceous deposit in the orifice is entirely obviated."

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Get one while you can — the edition is limited

A "System" of Steam Turbines

STEAM ECONOMY TURBINE

"Sui Generis"

Proficiency in modern steam practice demands thorough knowledge of the differences existing in various types of steam turbines.

These differences, together with very important but often overlooked construction features, are discussed in this booklet in a way that you would like.

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KERR TURBINE COMPANY
WELLSVILLE, N.Y.

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TRADE PUBLICATIONS.

AMERICA

Chelsea clocks are described in a booklet just published by the Chelsea Clock Company, 16 State street, Boston, Mass. This company makes a specialty of ship's clocks of all kinds, and any of our readers interested in the subject should send for a free copy of this booklet.

Taylor forged steel boiler nozzles are described in an illustrated catalogue published by the American Spiral Pipe Works, Chicago, Ill. These nozzles are seamless, are forged from a solid billet without welding, and are said to be unbreakable, free from sweat leaks and absolutely tight when attached. The company states that numerous delays and rejections are being eliminated by its use in the leading boiler shops.

N. T. C. regrinding valves are fully described in a neat 16-page catalogue just issued by the National Tube Company, Pittsburg, Pa. Every user of valves should send for a copy, mentioning this magazine, so as to receive one free of charge. Following is a summary of the principal advantages of these valves, as stated in the text: "The regrinding valve wheel is efficient in size, weight and design; the stem is cast from a special brass composition; the stem and bonnet threads are long; the stem and bonnet threads fit perfectly; the stem and bonnet threads do not strip; the bonnet neck is short and symmetrical; the union bonnet ring will not stretch the neck; the valve body is short and will not take the sag of pipe line; the diaphragm is heavy and permits many regrindings; the seat and disc are convex, preventing sediment deposits; the seat is cast solid with body; the hubs are extra heavy and built close to the body; the hubs have deep thread chambers; the joints are steam tight; the lift is beyond requirements; the parts are interchangeable; the valve is easily and quickly reground; the valve is strong to resist twisting strains; the valve is tested with steam and hydraulic pressures; the valve is carefully inspected throughout manufacture; the valve is made from a special high-grade brass mixture; the valve can be safely packed while under pressure; the valve can be opened and closed several million times, and the valve can be depended upon for long and efficient service."

"Portable Ozonators" is the title of a bulletin just issued by the Sprague Electric Company, 527 West Thirty-fourth street, New York. The bulletin is splendidly printed and fully illustrated, giving a good amount of information regarding ozonators for use in households as well as in offices and manufacturing plants. A number of illustrations show the construction of the device when taken asunder. Everybody is interested in fresh air, and naturally will want to send for a copy of this bulletin.

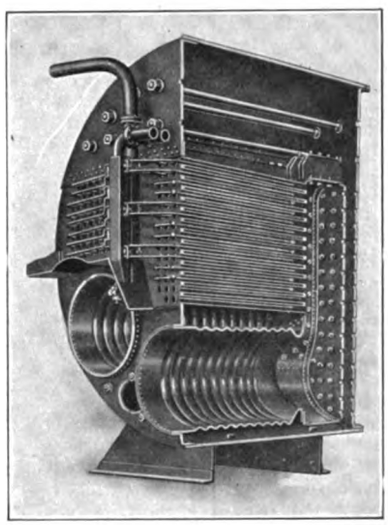
"Story of the Imperial" is the title of a 9 by 12 booklet just issued by the Ingersoll-Rand Company, 11 Broadway, New York. Novel and attractive in design, it features in brief and simplified form the superior points of design and construction maintained in the Imperial line of air compressors. Page for page it carries the reader through the various stages of construction, giving a very concise and elaborate idea as to just how the machines are built. Every user or contemplated user of compressors should not be without a copy of this booklet.

"The Reason for It All" is the title of a circular regarding "Model Star" valves, which has just been published by the William Powell Company, Cincinnati, Ohio. This circular states "Our claims for superiority are based on facts as follows: Stem machined acme thread admitted the best for wear; packing nut deep and spacious for packing material; bonnet with cone or beveled face connection similar to ground joint union; hexagonal union swivel nut tightens trimmings to the body; red lead or cement is unnecessary to make it tight; body shell shows the uniform distribution of metal, also diaphragm thickness for a good bearing. The 'Model Star' valves are cast of steam bronze composition which conforms to the requirements of the Bureau of Steam Engineering United States Navy Department. These valves have stood the test of higher steam pressures for years. The success that has already attended their use on Government vessels and battleships clearly demonstrates that they have satisfactorily fulfilled the demands of their requirements on the high seas as well as in every power house in this country. All 'Model Star' valves are carefully assembled and tested to double their working pressure and are unconditionally guaranteed. These valves are made in medium and extra heavy patterns, also screw and flanged ends."

SCHMIDT FIRE TUBE SUPERHEATER
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

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LOCOMOTIVE SUPERHEATER COMPANY, 30 CHURCH STREET, NEW YORK
PEOPLES GAS BLDG., CHICAGO

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Safety valves, steam gages and blow-off valves are described in a catalogue published by the Crosby Steam Gage & Valve Company, Boston, Mass. A copy of this catalogue should be in the hands of every user or maker of boilers, and one will be sent free to any of our readers upon request.

"A Monthly Digest," published by the Flannery Bolt Company, Vanadium building, Pittsburg, Pa., will be sent to any of our readers upon request. Over 390 railways are stated to be using the Tate flexible staybolt, not only in the United States but in Canada, Mexico, Japan, China, India, England, Germany, Brazil, Peru and Africa.

"Drawing Instruments" is the title of a pocket-sized booklet, 300-M. E., published by F. Weber & Company, Philadelphia, Pa. "It is now over twenty years since we introduced Riefler's patent round-system drawing instruments in this country, and it is very gratifying now for us to state that during this short period they have not only fought every prejudice brought into the field against them by jealous manufacturers of the old systems, but have made such great progress through their most practical and novel form of construction and through their excellence of qaulity, that every professor of the many colleges where they have been adopted, as also every draftsman that has used them, pronounces them to be superior to any other make. A detailed description of the system would seem almost superfluous, and we therefore confine ourselves in the description that follows herewith to some of the most important points which show their superiority of construction toward the old triangular-shape system. The superiority of this round system is further manifested by the many imitations that have sprung up lately, but which cannot be compared in quality with the Riefler's, and in order to protect our patrons against such we have stamped every genuine Riefler's instrument with our initials, 'F. W. & Co.'"

The Sirocco System of purifying, cooling and humidifying is described in Bulletin No. 23 just issued by the American Blower Company, Detroit, Mich. "The importance of washing or purifying air used for ventilation, especially in buildings located in thickly populated communities or in manufacturing centers, is no longer questioned. Eminent architects, engineers and bacteriologists have collaborated in conducting experimental and research work along scientific lines, with the result that some form of purifying equipment is considered essential to insure satisfactory hygienic conditions from any ventilating system. The earliest forms of equipment were the burlap and coke screens. These devices, however, even under favorable conditions, only partially accomplished the functions they were designed to perform, required constant attention to maintain in a sanitary condition, and became a serious menace to public health when this attention was not given. In fact, there is now little doubt but that a ventilating system in which these so-called purifiers were used was far more detrimental to public health than the complete absence of ventilation. Because of our being identified with ventilating work as designers and manufacturers of this class of apparatus, we naturally have been in close touch with the development of more modern and sanitary forms of purifying, cooling and humidifying appliances. We have used in connection with our apparatus probably every form of this class of equipment on the market, and have therefore had exceptional opportunities of judging of their relative merits. The McCreery Engineering Company—originally of Toledo, Ohio, and later of Detroit, Mich.—were pioneers in this field, and have been actively engaged in the designing and installing of systems for ventilating and purifying for fully twenty-five years. While their earlier work was almost exclusively confined to marine work, including most of the larger vessels in the United States navy, they later extended their field to include public buildings, schools, churches, theaters and industrial plants, of which they have a large number to their credit. In the course of their twenty-five years' experience numerous improvements have been made, all of which have been protected by patents. We have always been closely connected with these people, supplying them with equipment used in connection with their installations not manufactured by themselves. Largely on account of this connection we were recently given the opportunity of taking over their entire business, patents, good will, etc. We take pleasure in announcing that the McCreery purifying, cooling and humidifying equipment will hereafter be exclusively manufactured and sold under the trade name 'Sirocco.' It will be our aim to maintain the same high standard of workmanship, design, efficiency and service in manufacturing and marketing this equipment that has given 'Sirocco' products a world-wide standing."

H-P = PLAN / 33,000

You can compute P from your indicator card, you know L and can figure A, but how do you find N? The surest way on a high speed or a slow speed engine, is to use a

Starrett Speed Indicator

It registers any speed without heating of parts. Equally good for motors, gas engines, line shafting or any revolving machine-part. Rubber tips for centered or pointed shafts. For sale at all hardware stores.

Get the Starrett Catalog No. 20 L. It shows other tools for the engineer.

The L. S. Starrett Company
Athol, Mass.
NEW YORK 150 Chambers Street — LONDON 36 & 37 Upper Thames Street, E. C. — CHICAGO 17 No. Jefferson Street
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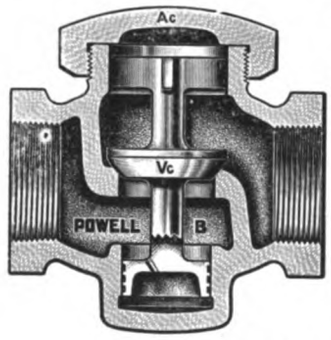
POWELL VALVES
(Especially The "White Star" Valve)

Five points of efficiency combined in the NEW POWELL NOISELESS AIR-TIGHT DASH POT CHECK VALVES



1. Body symmetrically designed and well proportioned.
2. Metal distributed to meet most wear Note thickness of diaphragm.
3. Disc cast of Powellium metal that will resist corrosion.
4. It is the best check valve for air compressor lines on the market today.
5. No pounding on the diaphragm. Disc seats itself automatically. All parts are made to gauge and are interchangeable.

Made in sizes ⅛" to 3"

Ask your dealer for "Powell" Valves—or write us

THE WM. POWELL CO.
DEPENDABLE ENGINEERING SPECIALTIES.
CINCINNATI, O.
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Used with oil or grease, this substitutes the gliding of graphite on graphite for the grinding of metal on metal, in the bearings. It is the perfect natural lubricant.

Send for "A Study in Graphite," No. 75.

Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

"Simplex" means quality, the quality that has stood the test, the "customer's test," the test that means hard work well done.

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Marine Producer Gas Plants

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MARINE ENGINEERS AND STUDENTS

It is devoted exclusively to the practical side of Marine Engineering and is especially intended for operative engineers and students of the subject generally, and particularly for those who are preparing for examinations for Marine Engineers' licenses for any and all grades.

The book is illustrated with nearly *four hundred and fifty diagrams and cuts* made especially for the purpose, and showing the most approved practice in the different branches of the subject. The text is in such plain, simple language that any man with an ordinary education can easily understand it.

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A supplementary catalogue and price list of Richter mathematical instruments has just been issued by F. Weber & Company, Philadelphia, Pa. "In presenting this supplement to our general catalogues, we desire to call attention to the fact that we have added to our already extensive and most complete line of drawing instruments, the genuine Richter mathematical instruments, long known to the American draftsman as dependable tools. They have been for many years considered standard in Europe, enjoying this distinction with only one other brand, namely, genuine Riefler, for which we are sole United States agents. The flat style of construction of the Richter instruments lends a lightness to the tools, preferred by the draftsman and in no way impairs their strength; adding, however, greatly to their appearance. Their free joint movement, responding evenly to the hand, at once places them in the favor of the most discriminating user. We desire to call particular attention to the improved straightening device with which the dividers and compasses are fitted. Instead of impairing the strength of the heads of these tools this straightening device adds thereto, as will at once be apparent upon inspection of the tool, or upon examination of the illustrations of this improved straightening device in the following pages. This is the only straightening device which does not wear out with ordinary usage and the only reliable style attachable to instruments of first quality. The advantages of the ring-spring construction of the bow instruments are self-evident without further explanatory remarks. It suffices to state that this manner of regulating the bows is being universally adopted in preference to the old style."

Schmidt marine superheaters are described in an illustrated catalogue published by the Locomotive Superheater Company, 30 Church street, New York. "In order at all times to obtain the maximum available power with minimum fuel consumption, or to operate marine equipment at the highest efficiency, it is essential that the ship owner and operator be conversant with the advance and development taking place in the design, construction and operation of marine power plants. The use of high steam pressures and the perfection of multiple-expansion engines have accomplished much during the past few years in reducing the cost of operation. It is, however, quite generally conceded that advancement along this line will not show as much improvement within the next fifteen years as it has shown in the same period in the past. In the future, rapid advance in the economy of marine power plant operation must be brought about in other ways than by a continuation of increasing steam pressures and the multiplication of steam expansions in engines. The next step in the perfection of this class of power plant lies in the adoption of the use of superheated steam, which fortunately takes up the trend of development where the several stages of compounding have left it. In presenting, as it does, the next progressive step, it is clearly manifest that superheating is indispensable as a means for securing increased economy. The benefits attending the use of superheated steam are of so important a character and so easily obtainable, at the present state of development of marine power plant design, as to warrant the careful consideration of every steamship owner who is seeking further economy and increased profit. Superheated steam, on account of its many advantages, has been in general use in stationary power plants for several years. In this field it has become so well established that one could hardly conceive that an engineer of to-day would design a large stationary plant without including the superheater equipment. It has also attained a commanding position in locomotive practice, to the extent that the superheater has come to be considered an essential part of the locomotive. Practically all the locomotives that have been constructed within the past few years have been equipped with superheaters, and the benefits derived from their use have been so great that the owners of locomotive equipment, realizing the loss that they were undergoing by operating locomotives with saturated steam, have adopted the practice of installing the equipment in existing locomotives. Within the past few years superheating has found increased favor in marine service, and in this service has proven as profitable to the owners and operators of marine equipment as it does to those who own and operate stationary power plants or locomotives. It has given very excellent results in all classes of vessels, whether they navigate on inland waterways or are in ocean or coastwise service. The type of superheater that has been most important in this service, and which is being generally adopted by steamship owners and builders, is the Schmidt firetube type. At the present time there are over 900 inland, coastwise and ocean vessels, totaling over 1,000,000 horsepower, equipped with superheaters of the Schmidt design."

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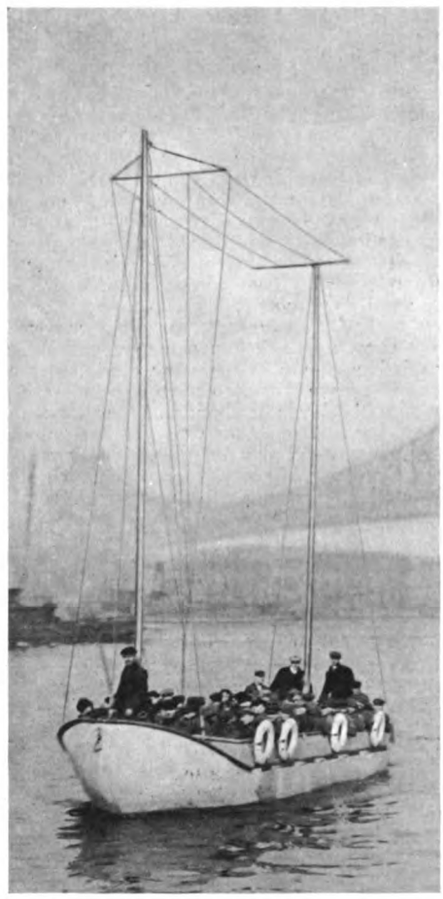

30' Lundin Power Life Boat with 64½ persons on board

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4. Its form and size permits it to be easily and quickly maneuvered when first launched or when the engine is disabled.

5. It is provided with means for towing other life boats and keeping them together.

6. It is equipped with a line carrying gun to enable it to establish a connection from a stranded ship to the shore or to rescue ships.

7. It is equipped with a thoroughly protected Marconi wireless outfit of wide radius.

8. Engine of a thoroughly up-to-date type is installed.

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"Uncle Sam's Favorite Engine" is the title of an illustrated circular just published by the Buffalo Gasolene Motor Company, Buffalo, N. Y. "Uncle Sam is a hard master, and when he buys he must have the best. Especially is this true in machinery lines, where real hard, consistent work must be done and results obtained based on the strictest possible specification. Marine enine manufacturers in particular have found this out, and that is the reason perhaps why only a few engine companies seek Uncle Sam as a customer. He is too critical. That may be reason, too, why there are so many Buffalo engines in the government service. You find them everywhere, particularly the heavy-duty types in harbor and canal improvement work, because of their extreme reliability and economy, and the further fact that they run all the time on a reasonable fuel consumption and deliver their rated horsepower constantly with a minimum of attention and repair. A particular case of government service where a Buffalo engine has made good is the work launch *James C. Long,* which for the past two years has been doing work on the Illinois and Mississippi Canal, commonly known as the 'Hennepin' Canal. This is one of the most recently constructed of our inland commercial waterways, and connects the Illinois River below La Salle with the Mississippi River at Rock Island. The canal is 75 miles long and about 80 feet wide at its narrowest part with the least depth of 7 feet. The locks are 170 feet long between gates, 52 feet wide with 7 feet of water over the sill. All bridges have a 17-foot clearance. There are 31 locks, and from the Illinois River to the high level is a rise of 200 feet, to reach which you go through 21 locks with a lift of from 8 to 11 feet. The *James C. Long* carries a 26-30-horsepower Buffalo heavy-duty engine, which was installed in April, 1912, and up to July 1 of this year, according to a statement of Assistant Engineer L. L. Wheeler, had run 5,200 miles, almost all of which was with heavy tows. The average rate of speed would probably not much exceed 3 miles per hour. In other words, the engine had been doing heavy duty for 1,700 hours or more. Since July 1 of this year she has not been kept so steadily employed. She has run 2,585 miles and used 1,287 gallons of gasoline. Almost all of this running was with tows, but the tows were not as heavy as prior to July 1 of this year. The only repairs which have been necessary on the engine of any moment were the replacing of the valve rod lifter levers, which had worn, due to shifting on the rod on which they are strung."

"The Oxweld Process Applied to Heavy Steel Plate and Boiler Shop Work" is the title of Bulletin No. 1, just published by the Oxweld Acetylene Company, Newark, N. J. The bulletin states that as a means of producing superior metal joints and connections the merits of the Oxweld process are many. An ideal joint or seam in metal is one that will be absolutely tight and of 100 percent efficiency. It will not be liable to abnormal deterioration; will not require any subsequent attention or repairs; will not be fabricated with an excess of metal, and the cost will be within commercial limits. It is impossible to secure all these qualities in practice by any method, but the Oxweld Acetylene Company claims that its process most closely approaches these qualifications. Another use for oxy-acetylene welding is in welding cracks between staybolts, and the company states that most large railroad shops in the United States consider the welding blow-pipe an indispensable part of their equipment.

"Marine Repairs and Boiler Welding with the Oxweld Process" is the title of Bulletin No. 1300, published by the Oxweld Acetylene Company, Newark, N. J. One of the illustrated articles in this bulletin describes how more than $1,300 was saved when repairing the stern post of the steamer *Martin Mullen.* "The steamer *Martin Mullen,* operating between ports on the Great Lakes, was recently driven ashore during a severe storm, and pounded on a ledge of rock until the stern post was broken at the boss. After the steamer was hauled up for repairs the owners faced the serious problem of replacing the stern post, or if some efficient process could be found of repairing it. The total weight of the stern post was 9,000 pounds, and its value $2,000. Under ordinary conditions it would have been cut off on a line marked *'A-A'* in the sketch between the boss and the shoe. The shoe would have been saved, but the balance of the post would have been renewed by forge-welding a new piece in place. This would involve an expense of about $1,500. They considered this costly operation—which would involve the loss of probably several weeks—and determined to repair the stern post with the oxweld process. A special preheating furnace was erected on the spot, and the new metal was welded into the break, as shown in the sketch. With the oxweld process the entire welding operation took only about five hours."

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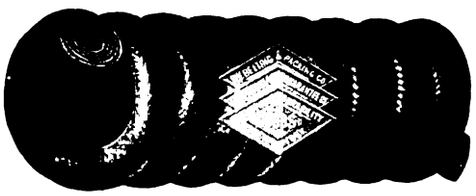
It has stood the test of years and not found wanting



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WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

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The Milwaukee wall radial drill and reamer is described in a circular published by the Vulcan Engineering Sales Company, 2077 Elston avenue, Chicago, Ill. This is stated to be a high-grade tool designed to fill the requirements of shipyards, boiler shops, structural iron works and bridge shops, and any plant where large surfaces have to be covered for drilling and reaming. A special effort has been made to eliminate vibration, which is a great fault in some machines of this character. The levers and hand wheels have been brought within easy reach of the operator, thereby making it a one-man tool. All parts have been made strong and rugged, so that they will stand up under the hard usage which this type of machine receives. The gears are all cut from solid blanks and the bearings are bronze bushed throughout, thereby reducing friction to a minimum, with resultant saving in power and wear of parts. This machine can be bolted to a building column, to the wall, or carried on a car, making a portable machine which can be moved to any part of the shop. Power connection is made by coupling a countershaft, belt or gear driven to the upper horizontal frictional clutch shaft. The power feed consists of four changes of gears in connection with a worm gear and friction clutch device. The hand-feed is direct, and is operated by a large hand wheel, which also constitutes a quick return when power feed is disengaged. A counterweight automatcilly raises the spindle on release of the hand-feed.

"Linoleum Cements and Glues for Attaching Linoleum to Wooden, Steel, Tile and Concrete and Cement Floors," especially for marine use, is the title of a pamphlet published by L. W. Ferdinand & Company, 201 South street, Boston, Mass. "Directions for use: The linoleum should first be laid on the floor without cementing until all the stretch and roll is taken out of it. To cement down linoleum if the very best result is desired the surfaces of both the floor and the linoleum should receive a fairly heavy coat of cement. Satisfactory results are, however, obtained by coating the floor only with cement, and often the seams and edges alone are cemented. Where the surface of the floor is covered with cement, 1 gallon will lay about 12 square yards; on cement floors, if porous, a little more will be required, if hard and smooth, a little less. After the cement has been applied and the linoleum laid it should then be pressed down firmly to the floor. The best method of doing this is by using sand bags about 50 pounds in weight, which will conform to any uneven surface of the floor, or by laying planks and covering them with some heavy substance, these planks should be laid along the edges and seams, and not less than 18 inches apart over the entire surface, and can be weighted with cast iron bricks or any material heavy enough to keep the contact perfect between the linoleum and the floor. The United States Government specifications call for 12 pounds to the square inch for 48 hours at a temperature of 70 degrees F."

The "White" system of fuel burning is described in a 32-page illustrated catalogue published by the Washington Engine Works, 601 Washington street, New York. "This system is the outcome of numerous experiments to attain perfection in the burning of fuel oils, using mechanical atomization. Years of experience have demonstrated the necessity of getting away from the steam atomizing, with its feed-water losses and the compressor as used with the air atomizer. The burner is designed to break up or atomize the oil as fine as possible. This is accomplished by driving the oil along a number of flutes or pasages in a cone, and without retarding its velocity, impinging it onto a finer angled cone, delivering it from orifice in a fine spray at a pressure of 60 pounds, which can be reduced to 10 pounds, the spray being still fine enough to flame. The burner is admirably adapted for the burning of the heavy crude oils, in the burning of which in practice it has met with much pronounced success, burning crude Mexican oils as heavy as 10 Baume. In practice the entire contents of the furnace are removed (no bricks being required whatever), and the air supply delivered through our patent air-heating front, with its arrangement of ducts conveying the air to the center and around the burner. The burner is surrounded by a perforated jacket, on which is a sliding cone governing the location and spread of the flame. There is a further arrangement of air regulating cones, which control the supply when running and entirely close the air admission when not burning oil. The flame burns at about 1 inch from the burner, due to the perfect admixture with the air, and complete combustion is obtained at the front end of the furnace. The burners are made from 40 to 500 horsepower and over, according to requirements, one burner being all that is necessary for any furnace. Complete combustion of the oil is obtained, the entire operation being noiseless, efficient and cleanly."

Sturtevant
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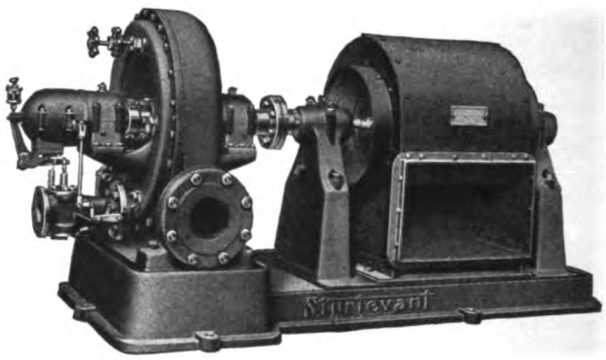
Turbo-Fan Units for Marine Work



Sturtevant Multivane Fans driven by direct connected Sturtevant Steam Turbines make compact units of small size, large capacities and exceptionally low water consumption.

These sets are specially adapted for forced draft work. The large volume handled by comparatively small units make them invaluable for marine service where space is always restricted.

The principal American built vessels both in the Navy and Merchant Marine are equipped with Sturtevant Fans.

STURTEVANT ENGINEERS will suggest THE PROPER STURTEVANT FAN to fulfill your requirements.

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Fine Blue Print Drawing and Tracing Papers

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Second-Hand Surveying Instruments in Perfect Order at Reasonable Prices

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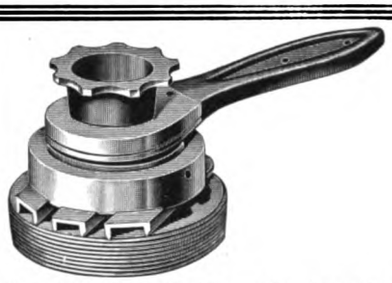
Branch Houses: **St. Louis** **Baltimore**

The Mahr portable torch for boiler shop use, is the subject of an illustrated circular issued by the Mahr Manufacturing Company, Minneapolis, Minn. The statement is made that this is the handiest tool in the boiler shop, and that being mounted on wide-tire wheels, one man can easily handle it when taking it from one job to another. The elbow nozzle is said to be especially handy for use in straightening crown sheets, taking out bags and for similar work. An unusually high degree of heat is said to be obtained as a result of utilizing the full heat value of the oil in complete combustion.

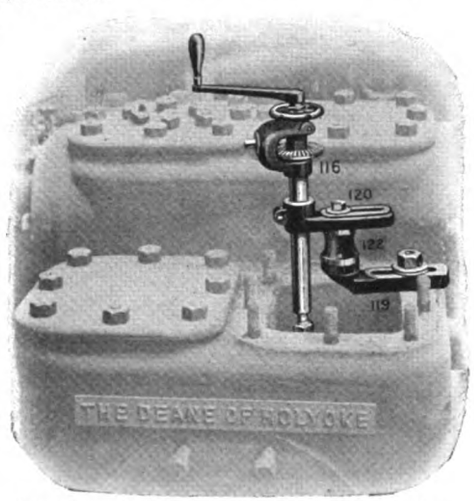
MARINE ELECTRICIANS
SPECIALISTS ON ENGLISH WIRING
DYNAMO REPAIRS and SUPPLIES
CONLAN ELECTRIC CO.
43 MURRAY STREET NEW YORK

Schutte & Koerting Company, Twelfth and Thompson streets, Philadelphia, issue a complete line of catalogues as follows: Catalogue No. 1, injectors. No. 2, steam jet syphons, acid syphons for lifting liquid; water jet eductors for lifting water, for cellar draining, in mines, etc.; sand and mud eductors. No. 3, water heaters, noiseless working. No. 4, steam and water jet apparatus for moving air and gas; furnace blowers, gas producer blowers, steam or water jet ventilators, blast nozzles for chimneys, exhausters and compressors, sulphur furnace, oil bleacher, gas exhausters, exhausters for starting pumps and steam engines, agitators, water jet air pumps, laboratory vacuum pumps, water jet air compressors. No. 5, condensers. No. 6, spray nozzles, humidifying plants. No. 7, Oil-burning plants for stationary boilers and for steamships; smoke-burning apparatus; automatic water softening plants. No. 8, valves, stop check valves, balanced valves, free exhaust valves, hydraulic valves, etc.; blow-off valves and swing joints; steam traps and test pumps. Readers of International Marine Engineering can secure copies of any of these catalogues free of charge by asking for them and mentioning this magazine.

Regarding Steam Turbines.—International Marine Engineering has received the following letter from the Terry Steam Turbine Company, Hartford, Conn., which will doubtles interest many of our readers: "During their trip abroad last summer, the A. S. M. E. members noticed that the leading turbine builders of Germany and Switzerland have, in one respect, universally adopted the same design for condensing turbines where maximum economy is desired—a combination of a multi-velocity stage element for the high-pressure end with a series of multi-pressure stage elements (such as Rateau, Zoelley or Parsons) in the low-pressure end. This is gratifying to us, as it confirms most strongly the wisdom of the design our company has already brought out in this country in the small turbine field (500 kilowatts and under). It is interesting to note that the latest machines or two of the principal large turbine builders in this country are also of this combined design, while we, having the firm belief that it is the ultimate standard, were the first to adopt it in the small turbine field. The 'return flow' feature of this turbine is in a way revolutionary. The advantages which it has over a straight-flow machine, eliminating as it does the possibility of air leakage to the condenser, are obvious to all engineers having had experience with steam turbines."



This illustration shows the operation of recutting pump valves in the water chamber of vertical double acting triplex pumps.



This illustration shows the Dexter Machine recutting valves in water chamber of a Deane Pump.

ECONOMY IS THE ORDER OF THE DAY

If you reface the seats of your pump valves

with a Dexter Pump Valve Machine, you will save 50% of the power used, by cutting in half the number of strokes

You can prove this without cost to yourself

for we'll gladly send one of these machines on thirty days' trial to any responsible party

Catalog I-16 Illustrates These Machines

THE LEAVITT MACHINE CO.

ORANGE, MASS., U.S.A.

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An electric fan catalogue for 1914 is now being distributed by the Sprague Electric Company, 527-531 West Thirty-fourth street, New York. It comprises 36 handsomely printed pages in two colors. The catalogue is divided into three sections. First, direct-current fans; second, alternating-current fans, and, third, general information. All types of fans manufactured by this company are shown in excellent illustrations, including not only the regular type used for decks and on brackets, etc., but exhaust fans, ceiling fans of various types and designs, together with much valuable information regarding the cost of operating fans and the best methods of installing them.

TRADE PUBLICATIONS

GREAT BRITAIN

Hamilton's patent hawse pipe and dock flange is described in a circular published by A. Hamilton & Sons, 13 Bute Crescent, Docks, Cardiff, Wales. The following advantages are claimed for this device: "No wear and tear whatsoever in pipe, and will last as long as the life of the ship. The only thing subject to wear being the rollers, which can be renewed at a very small cost without causing delay to any ship. Cable chains will last twice as long with a hawse pipe of this type, as they receive fair treatment and not subject to half the wear and tear, consequently less overhauling required. With such a type of hawse pipe as this your windlass engine would not need to be near so powerful, as there is practically no friction; in fact, this is reduced to a minimum. Then, again, your windlass is not subject to such stresses and strains, as it is greatly assisted by means of these rollers, which are revolving in their bearings while the cable chain is passing over them. A hawse pipe of this design, with its many advantages compared to the one in general use to-day, is well worth fitting to any ship of any size, as it will save a great deal of expense. The first cost perhaps being a little extra, but after this the other is a very small item."

"Brooke Industrial Motors" are the subject of an illustrated catalogue of 24 pages published by J. W. Brooke & Company, Adrian Works, Lowestoft. "In previous catalogues we have dealt fully with the methods of construction of 'Brooke' motors, but perhaps a brief description will serve to give customers a slight idea of the modernity of the 'Brooke' works. Extensive additions to works and plant have been made two or three times recently to meet the ever-increasing demand for 'Brooke' motors, and the most up-to-date machinery is employed to ensure a quick and thoroughly first-class output. In the first place, the factory in which the 'Brooke' motors are constructed is one of the largest in the country devoted entirely to the construction of industrial and marine internal-combustion engines. Its lighting arrangements are perfect, it is well ventilated and heated, and, above all, it is scrupulously clean. The most important aim—from the designing room to the loading-out stage—is thoroughness, and work that is not up to this standard is not allowed to leave the works. One thing that intending customers should bear in mind is that expensive jigs have been manufactured for each size motor, to which all the parts are made, and such parts are all subjected to the most severe tests and examined most carefully to see that they are true to gage before they are finally assembled. Furthermore, all the parts are manufactured in our works, about the only exception being the magnetos. Such fittings as are purchased are absolutely of the best that can possibly be obtained, price not entering into the question. The result of these careful and systematic methods is that we are able to produce the most perfect motor on the market at a reasonable figure. As we have remarked above, they are not a light, cheap article, built to flood the market, but are substantially constructed in every detail, and as good for commercial as for pleasure purposes. Moreover, they are always absolutely reliable. In conclusion, we might add that the fact of our carrying out a large amount of Admiralty and government work generally, which has to undergo the most stringent tests in every detail, is ample proof of the high-class workmanship and material employed in the construction of the 'Brooke' motors."

IMPORTANT ISSUES TO COME

JUNE NUMBER

This will be our Sixth Annual Dredge Number. Our Dredge Numbers have become an important institution, as they contain the most valuable contributions made during the year to dredging literature.

NOVEMBER NUMBER

This will be our Fifth Annual Shallow Draft Boat Number. The fact that copies of this issue are asked for from all parts of the world, even from the waters of Central Africa and the rivers of the interior of South America, as well as from other countries, show the great importance of this issue.

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17 Battery Place, New York, and 31 Christopher St., Finsbury Sq., London, E. C.

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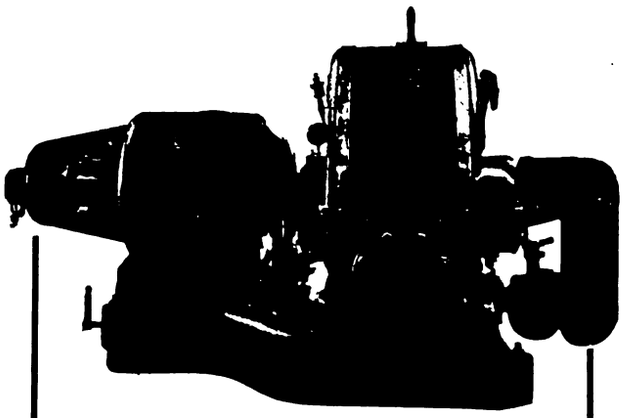
TERRY MARINE TURBINE



By reason of its compactness, light weight, freedom from vibration and close regulation, the new

TERRY

marine lighting set (Type GM) establishes a new standard for this service.

Designed so that it can be arranged to exhaust into the closed feed-water heater, to the low-pressure receiver of the main engine, to the main condenser, to the auxiliary condenser, or overboard, this 25 kilowatt set is entirely self contained, rugged, reliable in operation, with low maintenance cost and high economy.

Where conditions are unusually severe forced feed lubrication is supplied in addition to the usual ring oiling system. An emergency governor provides absolute safety and the Terry horizontally split casing allows quick, easy inspection without disturbing alignment or steam and exhaust piping.

Write us for further details.

(T-133)

The set weighs 3400 lbs. runs at 3000 rev. per min. and gives current at 125 volts.

THE TERRY STEAM TURBINE CO.

Main Office and Works: HARTFORD, CONN.

British Agents for Marine Forced Draft Sets - - Yarrow & Co., Ltd., Scotstoun, Glasgow.

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BUSINESS NOTES

AMERICA

The Independent Pneumatic Tool Company, 1307 Michigan avenue, Chicago, announces the appointment of the following district managers: Mr. R. T. Scott, manager of Pittsburg district, with office at 1208 Farmers Bank building, Pittsburg, Pa.; Mr. F. H. Charbono, manager of Southern district, with office at 1629 Candler building, Atlanta, Ga.

High-Grade Steels.—The Latrobe Electric Steel Company, Latrobe, Pa., of which Mr. Charles W. Guttzeit is vice-president and general manager, is putting on the market steels of the highest grade for various uses. These steels are made in the Heroult electric furnace, thus giving them, it is believed, the highest quality that has yet been attained. The company guarantees its products. Among the several specialties are carbon and alloy steel castings, manganese steel castings and special alloy steel ingots.

The twelfth annual report of the Chicago Pneumatic Tool Company, submitted by President W. O. Duntley on Feb. 2, is as follows: "Your directors take pleasure in presenting herewith the twelfth annual report of your company, together with a statement of assets and liabilities, with profit and loss account, properly certified by your auditors. The volume of business secured by your company was the largest in its history, although business conditions generally were not particularly favorable, which, together with keen competition, necessitated the marketing of its product on a closer margin of profits. The sum of $257,951.32 has been disbursed in dividends for the year, making a total of $2,526,014.24 distributed in dividends during the life of your company, the balance of the earnings being carried to surplus account to provide additional working capital for the constantly-growing business of your company, also to provide necessary betterments to buildings, plants and machinery. The foreign subsidiary companies are increasing their business steadily, their earnings being retained by them to furnish the necessary additional working capital for their expansion. Of the first mortgage bonds originally created, about 833 have been or will be retired, and in the hands of the trustees of the sinking fund after they have invested the money now in their possession for the purchase of these bonds. A total disbursement of $1,380,000 interest has been made on these bonds during the twelve years the company has been in business. It was deemed advisable to make an appropriation from surplus to provide a reserve fund against possible obsolete and slow-moving material and product in inventories. Such action is conservative in view of the extensive variety and growth of your product."

Graphite to Prevent Pitting.—The United States Graphite Company, Saginaw, Mich., manufacturer of Mexican Boiler Graphite and other graphite products, sends the following letter from a user of boiler graphite. Mexican boiler graphite is, as we understand it, guaranteed only as a remedy for boiler scale, but here is an instance where it is said to have, besides accomplishing its primary mission, also eliminated pitting, which previous to the use of graphite had been very troublesome. The cause of pitting may usually be traced to the impurities present in the feed water, and the theory is that graphite, by coating the inner surfaces of the tubes and shell with a graphite polish, serves to prevent the impurities in the water from attacking the metal, thus checking pitting. The manufacturer, however, as stated above, does not exploit graphite as a cure for pitting, but very conservatively guarantees it only as a scale preventive and to prevent pitting in so far as it may be caused by the accumulation of scale. The letter from the Concordia (Kas.) Ice & Cold Storage Company's chief engineer is as follows: "I desire to inform you of the excellent results accomplished in our boilers through the use of your Mexican boiler graphite, having used it for the past year through a heavy ice season. Shortly after putting our new boilers in service I found corrosion and pitting on shell and tubes; in time this condition increased as more scale formed. As the compound we were using was unable to handle the scale-making solids (and was in our opinion the cause of the destruction of the metal), we decided a speedy remedy was much needed. I had heard considerable of the success others were having with your boiler graphite, and knowing there was no better preservative for metal than pure graphite, decided we should learn the value of it through a test in our own plant. The old hard scale has been entirely removed; the very thin formation we now have can hardly be called scale, it being very loose and porous, easily removed and leaving the metal with a bright polish, which acting the same as a thin metal plating has entirely arrested pitting and corrosion. We have found your boiler graphite the most economical as well as practical material we have ever used, and we wish to be of service to you should you at any time desire to refer to us anyone interested in trying your boiler graphite."

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and those interested in life-saving at sea. Capital and active assistance wanted for a new and officially approved appliance. Address *Marine Draftsman*, care International Marine Engineering, 17 Battery Place, New York

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Wanted—Leading Draftsman in hull and engine drawing room, also detailers. Address *Draftsman,* care of International Marine Engineering.

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Diesel Marine Engine Construction.—A European engineer, who for the last six years has specialized on Diesel engine construction with most modern European factories, desires position as chief technical leader for the Diesel engine department with an American shipyard or engine works located in a coast city. He is at present engaged in Europe, but desires to find a progressive firm that not only wants to build motors up to largest usual powers, but is willing to go still farther. No licenses. Own designing. Address *Diesel Engineer,* care International Marine Engineering, 17 Battery Place, New York.

BUSINESS NOTES

GREAT BRITAIN

The Frahm Anti-Rolling Tanks Agency, Ltd., 3 Dean Farrar street, Westminster, London, S. W., writes International Marine Engine as follows: "It may be of interest to your readers to learn of the development of the Frahm anti-rolling tank, and in this connection we may say that the vessel of about 21,000 tons gross recently ordered from Messrs. Swan, Hunter & Wigham Richardson, Ltd., by the Società di Navigazione Generale Italiana will be fitted with this device. This makes the sixth vessel fitted or being fitted with Frahm anti-rolling tanks for service in the South American trade, so that the comfort of passengers on this, as on several other routes, is now assured. This brings the total number of merchant vessels so fitted, or being fitted, up to thirty-one, of a total tonnage of 511,000 tons. Apart from these there are also war vessels fitted, or being fitted, with this device, the total displacement of which amounts to over 260,000 tons."

The Isherwood System of Ship Construction.—J. W. Isherwood, 4 Lloyds avenue, London, E. C., writes International Marine Engineering that 281 vessels, representing 1,267,000 gross register tons have been built on his system, including 108 bulk oil carriers representing 559,000 gross register tons. Mr. Isherwood goes on to state, "As a matter of interest I beg to give you the following information: The Union Iron Works Company, San Francisco, has contracted for a tank steamer, 420 feet by 54 feet by 31 feet, 6 inches, to carry about 9,200 tons deadweight. This vessel will be a duplicate of the steamship *Richmond,* built on the Isherwood system, and for the same owners, namely, the Standard Oil Company. The Gulf Refining Company, New York, has contracted with the New York Shipbuilding Company, Camden, N. J., for the construction of two oil tank steamers, 383 feet by 51.2 by 30 feet. These vessels will be duplicates of the steamship *Gulfoil,* built on the Isherwood system, and carry about 7,700 tons deadweight."

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TRADE PUBLICATIONS.

AMERICA

Howard D. Bennett, designer and builder of dredging machinery, whose address is care of the Skinner Ship Building & Dry Dock Company, Baltimore, Md., has issued circulars stating that he makes a specialty of designing hydraulic dredges, tugs, tenders, barges, scows, boilers, engines, dredge pumps, etc.

In the March issue of *Plymouth Products,* issued by the Plymouth Cordage Company, North Plymouth, Mass., is an account of the non-magnetic brigantine *Carnegie,* owned by the Carnegie Institute, Washington, D. C. The Plymouth Cordage Company states: "We take a good deal of pride in the fact that the original manila ropes and hemp fittings aboard this important and remarkable craft were all Plymouth cordage."

A beautifully printed, cloth-bound data book has just been issued by the Link-Belt Company, Chicago, Ill., and a copy will be sent free to any of our readers mentioning INTERNATIONAL MARINE ENGINEERING. "For the first time in history an engineering data book has been published by a manufacturing concern which will enable users of power to select the correct silent chain drives for their work and determine exact costs from list prices shown in the book. Besides giving complete engineering information on silent chain driving in simple and compact form, Data Book No. 125 describes many uses of silent chain for the efficient transmission of power, and gives specific reasons and illustrations showing application in a large variety of uses. Link-Belt silent chain is a series of links connected by joints which consist of segmental case-hardened bushings and case-hardened steel pins. The chain is as flexible as a leather belt—as positive as a gear. Its rated efficiency is 98.2 percent on actual test. It will transmit any amount of power quietly. Over 200,000 installations, we understand, were drawn upon for the information contained in this data book. The book is the only work of its kind, and consists of 112 pages, bound in flexible red cover. Copies can be obtained free of charge by addressing the manufacturers, Link-Belt Company, Thirty-ninth street and Stewart avenue, Chicago."

The Grinnell Automatic Sprinkler Bulletin for April, published by the General Fire Extinguisher Company, Providence, R. I., tells about the equipment of the Hamburg-American liners *Imperator* and *Vaterland* with Grinnell sprinklers. "The great safety first movement which is sweeping the world has been extended to ocean travel, the Hamburg-American Line having equipped its giant liners *Imperator* and *Vaterland* with Grinnell automatic sprinklers. This line has been the pioneer in many matters of safety and comfort for 'Those who go down to the sea in ships,' and this epoch-making step in protecting the most hazardous parts of these boats with the best of all fire fighters is in keeping with the spirit of progress which dictates the policy of the line. It is significant that the ships which need this protection least have adopted it first. There are hundreds of transatlantic vessels which have not a tithe of the structural fire protection qualities of the *Imperator* and *Vaterland.* The latter are in reality great skyscrapers floated out to sea. They are built largely of steel and fireproof materials. They have expert fire department staffs always on duty. These staffs have drilled the crews until they are efficient fire departments. But in spite of all these fire precautions the owners of these boats knew that there were certain parts of the vessels where fire might possibly start unnoticed and wreak devastation. They realized that such parts should have automatic sprinkler protection, just as have the basements, storage rooms, kitchens, etc., of skyscrapers. The Hamburg-American Line wanted a device that would find fire, put it out and sound an alarm without any human aid. They got Grinnell automatic sprinklers. The traveling public will be quick to see that if such naturally fire-resistive boats as the *Imperator* and *Vaterland* needed sprinkler protection in certain parts, that hundreds of ships which have much inflammable material in their construction must be fully protected by sprinklers or else pass into the category of floating fire traps, more than 155 of which have completely burned since 1906. After several of the more recent steamship fires there was talk to the effect that automatic sprinklers could not be successfully adapted to large ocean-going vessels. The Grinnell equipment on these big liners is positive proof that competent fire protection engineers can overcome any and all difficulties in the way of such installations. Unlike some of the installations on lake and sound steamers, the equipments on these transatlantic steamers are absolutely automatic."

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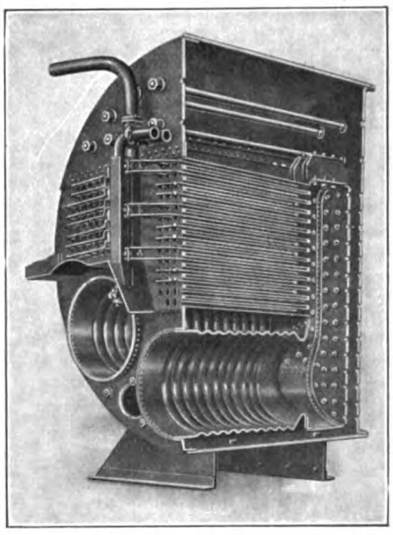

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"N. T. C." regrinding valves are fully described in a neat 16-page catalogue just issued by the National Tube Company, Pittsburg, Pa. Every user of valves should send for a copy, mentioning this magazine, so as to receive one free of charge.

"Freight and Package-Handling Machinery" is the subject of Bulletin No. 74, published by the Jeffrey Manufacturing Company, Columbus, Ohio. This company manufactures a large number of machines which are said to be of special value for use in steamship docks and piers. A copy of the bulletin will be sent to any of our readers upon request.

Portable tools are the subject of an illustrated circular just issued by the Stow Manufacturing Company, Binghamton, N. Y. The slogan of this company seems to be, "take your tool to the work, instead of the work to the tool." Among the tools described here are a tool post grinder, an electric hand buffer, an electric breast drill and some portable emery grinders.

Slide rules are described in a catalogue published by F. Weber & Company, Philadelphia, Pa. "With the aid of a slide rule, arithmetical, algebraic and trigonometrical problems may be solved more easily and rapidly and with much less chance of error than by ordinary calculation. The principle involved in the slide rule is the graphic representation of logarithmic values, but a knowledge of logarithms is not required for the successful manipulation of the rule. The principles which must be familiar are few and very simple and easily mastered with a little practice. Our 'Sphinx' slide rule embodies great improvements over other rules on the market. It is made of the very best, well-seasoned, built-up mahogany stock, with white celluloid facings. The graduations are all engine divided, clearly and accurately cut and, being on a white background, very legible. The main improvement, however, is the construction of the stock or body of the rule. The rules formerly constructed with celluloid facing on the inside of groove only, are always liable to warp with climatic changes. In our improved Sphinx slide rule this drawback is entirely overcome by covering the two faces of the stock with celluloid; this eliminates all liability of the rule to warp under atmospheric changes."

The oxy-acetylene process for marine use is described in a number of bulletins published by the Oxweld Acetylene Company, Chicago, Ill. One of these bulletins illustrates the welding of a cast iron propeller blade weighing 1,000 pounds, which was cracked and a portion cut off. The cost of a new blade would have been $75. The bulletin states that it cist $9.60 to repair it with the oxweld process. In another bulletin is described and illustrated the repairs made to a forged steel rudder frame weighing about 4 tons and valued at $1,200. This frame was welded at a cost of approximately $54. The bulletin states that without the oxweld process it would have been necessary to make an entirely new frame at a cost of about $1,200. Another bulletin illustrates how the oxweld process saved costly delay and repairs to a damaged lake steamer, the bow of which was bent. To repair it by ordinary methods would have necessitated dry-docking and the removal of all the stern plates with very costly delays. Instead, only a couple of plates immediately next to the injured portion were removed, the affected part was cut out, straightened and welded back into place with the oxweld blowpipe.

Fulton (Diesel type) oil engines are described in Bulletin E, issued by the Fulton Manufacturing Company, Erie, Pa. "Fulton oil engines are vertical, single-acting, four-cycle, with fully enclosed crank case. They are constructed to use crude oils or residue for fuel, but will work equally well on ordinary kerosene. Combustion in the cylinder is absolutely perfect, so that the exhaust is odorless and colorless. The engine is of the high-speed, heavy-duty type, and has no spark plugs, hot bulb or other auxiliary heating devices. The principle of operation is as follows: The piston on the first down stroke draws pure air into the cylinder, with no mixture whatever; on the second, or return stroke, this ais is compressed to upwards of 500 pounds per square inch. Just before the piston reaches the end of the compression stroke the needle of the fuel valve is opened and the fuel charge is blown into the cylinder by the injection air obtained from the small receiver. Ignition takes place by the heat of compression. The fuel enters the compression space in the form of a fine spray and flame propagation takes place slowly; there is no sudden explosion, but gradual combustion and continued pressure for practically all of the working stroke. As the piston approaches the end of the working stroke, the exhaust valve in the head is opened and held open during the scavenging stroke, and the burned charge is forced out, thus the cycle is completed."

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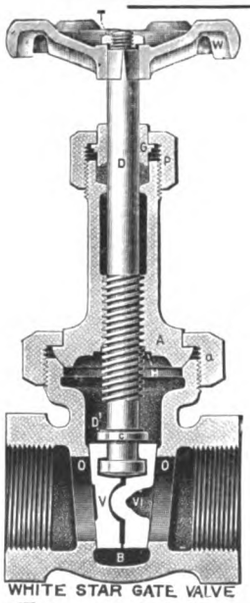

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Bolinder's crude oil engines, marine and stationary, are described in a catalogue published by J. & C. G. Bolinder's Mek. Verkstads A.-B. Stockholm, Sweden. "The Bolinder's crude oil engines are of original design, first-class workmanship and best obtainable material, and are the outcome of twenty years' practical experience in the manufacture of oil engines. All parts are manufactured throughout by the most modern machinery, and a perfect system of jigs and gages enables us to guarantee every part to be truly interchangeable. Their essential features are simplicity, reliability, economy and absolute safety, characteristics indispensable to the successful adaption of oil engines for industrial or marine power purposes, and the large number now in use (over 6,000 engines) is a sufficient guarantee for the justice of our claims."

A portable welding apparatus for machine shops, boiler shops, foundries and other uses is described in a circular published by Department E, of the Bermo Welding Apparatus Company, Omaha, Neb. The circular states that this portable welding apparatus "can be used when the high-priced stationary apparatus is useless, as in repairs required to large machinery parts, which cannot be moved out of place without incurring great delay and expense. With the 'Bermo' portable apparatus you bring the tool to the work instead of the work to the tool. Move it just like an electric drill, from one part of the shop to another, from one job to another. Many times 'Bermo' welders have been loaded into an automobile and taken to broken-down cars, and frames, steering gears and axles welded. Think of the saving of time and expense. After you once have it you would not part with it for many times its value, if you had to go back to the old-fashioned way of making repairs. There will be a 'Bermo' welding plant in every town in the country in a short time. Don't wait until your competitors drive you to it. Be a leader and beat them to it,"

A very complete catalogue of 230 pages, printed in several colors, has just been published by the New York Belting & Packing Company, 91 Chambers street, New York. A copy will be sent to any of our readers free upon request. Herein are described an enormous amount of rubber goods, such as packing, belting, fire hose, rubber tiling, gaskets, valves, etc. "This general catalogue contains useful and valuable information; describes the different lines of goods; names prices of same and gives much information in regard to their uses; it is arranged so that items can easily be located and in a convenient form. The catalogue refers to the product of the oldest and largest manufacturer of mechanical rubber goods in this country, its business having been established in Goodyear's time, and has through different processes, both as to manufacture and material, continued to be a standard throughout the world. Special catalogues are issued on interlocking rubber tiling, goods for engineers' use, including our entire and complete line of packings; goods for railroad service, mats and matting, garden hose, continuous-length hose and interior fire equipment; as well as a large variety of descriptive leaflets of certain staple lines. Any of these catalogues and booklets will be cheerfully furnished upon application."

A mechanical oil-burning system is described in a profusely illustrated booklet of 44 pages published by the Union Iron Works, San Francisco, Cal. "The oil-burning systems of the past have used a great variety of burners, which have necessitated an atomizing agent, such as air or steam, which, in turn, in the case of air atomization, meant the installation of an air compressor, etc., or with steam atomization an evaporator of sufficient size to make up the deficiency in the feed water. This meant quite an expenditure, not alone in the first cost, but in maintenance, repairs, etc. It was discovered that by heating the oil to a high temperature and forcing it through a suitable burner tip under pressure, it could be perfectly atomized. The Union Iron Works Company has been experimenting for some time on such a burner, and has at last produced one that has by far exceeded all expectations, and is conceded to be the best mechanical burner on the market to-day covered by the Dahl patents. By a mechanical oil-burning system is meant a system that requires neither steam nor air for atomizing the oil. The oil, after being heated to the proper temperature, is forced through the burner at the required pressure, the passages in the burner being such that the oil is thoroughly broken up before being discharged, so that it immediately volatilizes, and a perfect flame is obtained as soon as the oil leaves the burner. The pressure under which the oil is forced through the burner and the size of the tip regulate to a nicety the exact amount of oil that can be burned. The quantity of oil can be varied to some extent by the pressure, and more by the size of the tip used in the burner."

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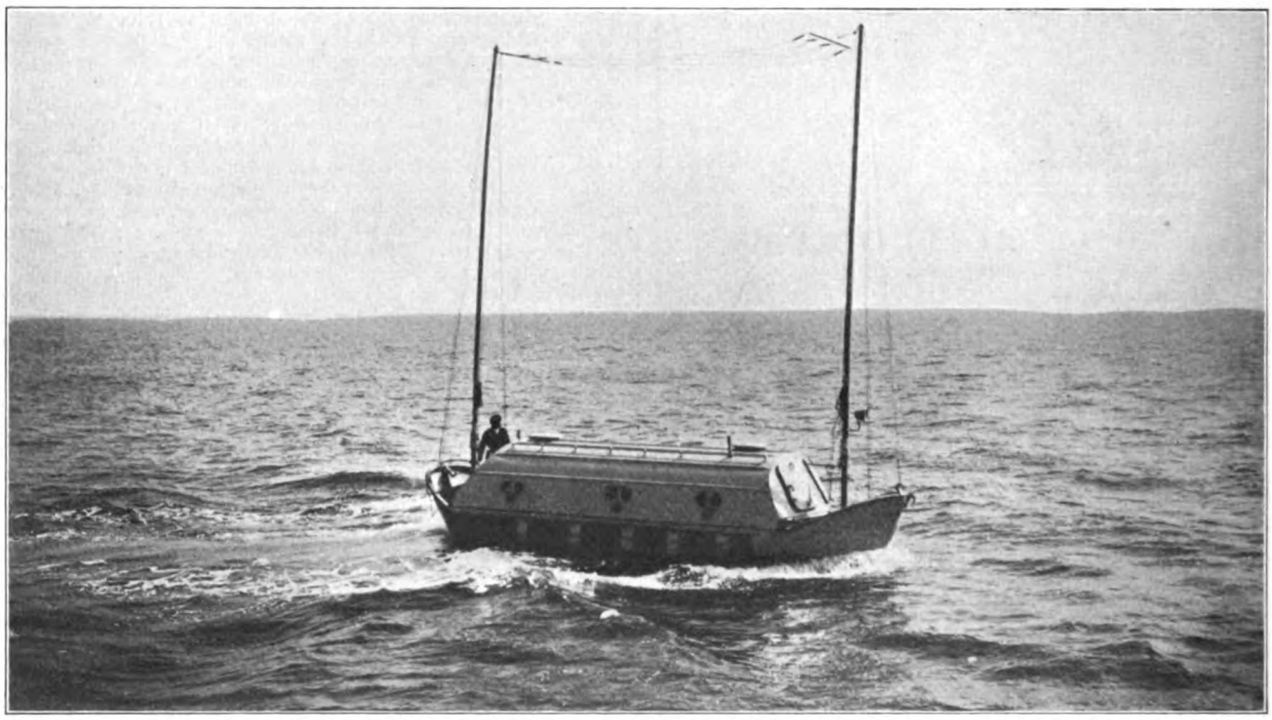
LUNDIN LIFEBOAT SYSTEM

Adopted by the United States Army Transport Service

The "Lundin" system is the only complete system in the world to-day. The various units comprising this system, viz.: Lundin Decked Life Boats, Lundin Power Life Boats, Standard Open Life Boats, Welin Davits, Non-Toppling Blocks, Lundin Davit Falls, Tilting Chocks and Automatic Gripe Release, are respectively the best of their kind on the market, and, as here combined, form a system giving the highest degree of efficiency, dependability, simplicity and durability.



30 ft. Lundin Housed Power Life Boat with 50 persons under the House

FEATURES OF THE LUNDIN HOUSED POWER LIFE BOAT

1. It is thoroughly seaworthy and as nearly unsmashable as is possible to build a life boat.
2. It is self-righting and uncapsizable.
3. It is provided with self-bailing arrangement to quickly relieve the boat of any water that might be shipped.
4. The housing affords protection to its occupants from the weather and seas.
5. The driving parts, such as the propeller and the shaft, are thoroughly protected from possible damage.
6. Its form and size permit it to be easily and quickly maneuvered when first launched or when the engine is disabled.
7. It is provided with means for towing other life boats and keeping them together.
8. It is equipped with a line carrying gun to enable it to establish a connection from a stranded ship to the shore or to rescue ships.
9. It is equipped with a thoroughly protected Marconi wireless outfit of wide radius.
10. Engine of a thoroughly up-to-date type is installed.
11. Etc. Lack of space prevents enumeration of the other features. We will be glad to furnish further information upon request.

Let us solve your life boat problems

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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"Pyrometers" is the title of a valuable 64-page book just issued by the Brown Instrument Company, Philadelphia, Pa. This book is believed to be the most instructive and elaborate treatise ever published for distribution on the subject of pyrometers and their uses. It is such a costly book to send out that it is not distributed indiscriminately. It is sent only to those people who write to the company, stating the name of the company by whom they are employed and their position with the company. Every man who has to do with a steam plant, and who is anxious to produce the best results, will want a copy of this valuable treatise to study up the subject of pyrometers.

A new catalogue on marine engines, boilers and machinery has just been published by the Marine Iron Works, 2036 Dominick street, Chicago, Ill. "We make a specialty of designing and building modern marine machinery and accessories, for either deep or shallow water boats, condensing or non-condensing. Engines, either single or double-cylinder, compound or triple expansion—steam or gasline. Although we prefer to build the entire and complete outfits of driving machinery, we shall be pleased to submit estimate when desired on the engine work and auxiliaries separate by themselves. Attention is called, however, to the fact that it is the correct combination of machinery and auxiliaries that produces the successful boat."

Protection from corrosion is the subject of a catologue issued by Toch Bros., 320 Fifth avenue, New York. "The time is fast approaching when vessels will be dry-docked for overhauling and painting, and in this connection we call your attention to 'Tockolith,' the patented cement paint for the priming coat on steel bulwarks, hulls and other surfaces. The question of protecting from corrosion the bottoms of steel vessels lying alongside docks for indefinite periods is one of importance, especially to the navy. At the Brooklyn navy yard it was found that stray electrical currents through the yard and adjacent waters caused marked local pitting along the waterline of the United States receiving ship *Hancock*. When this boat was dry-docked 'Tockolith' was applied, and was so successful in preventing further pitting from electrolytic action that it has since been used for priming the hull of the super-dreadnought *New York*, and has also been used extensively by the United States Government for priming its coal-hoisting machinery, Panama Canal locks and other important operations."

Among the interesting booklets published by the Nelson Valve Company, Chestnut Hill, Philadelphia, Pa., which will be sent to any engineer upon request, are the following: "The Log Book of the Power Plant," "Dependable Steam Valves," "The Solution of the Worst Boiler Room Problem," "Triple Tested," "Swing Check and Gate Valve in One," "They Hold Tight."

"Gyro" propellers are described in an illustrated catalogue issued by Capt. William R. Boutwell, Norfolk, Va. "Gyro is presented to the discriminating as a brand-new principle of propulsion and not a modification or supposed improvement of the screw propeller, as not a trace of the helical form appears in its driving surface. Exhaustive tests to which Gyro has been subjected indicate the greatest possible efficiency in the matter of speed or economy, a wide range of adaptability to various models, and, in constructed form, distinct superiority, in that the principle remains constant at any angle the blades are set. Gyro embodies all that ingenuity can give in design, the best metal that money can buy and all the accuracy and refinement possible to skilled workers. It yields the luxury of smooth running, the cleanest wake ever seen and every inch of speed obtainable."

"All Lubricant—No Waste—for All Kinds of Machinery," is the title of a leaflet just published by the Albany Lubricating Company, 708 Washington street, New York. "There is absolutely no machinery that Albany Grease cannot lubricate efficiently. Take shafting—overhead, horizontal or vertical—and you are up against a fairly difficult lubricating problem. Simply because it is so hard to get at it. Moreover, you can't afford to run any risks from the drippings. A small quantity of Albany Grease stays on the job—even on vertical shafting—longer than a large quantity of any other. And Albany Grease stays in the bearings, where all lubricants ought to stay but rarely do. In the Albany Grease booklet, 'Economic Lubrication,' a copy of which will be sent free upon request, you will find tests that actually prove Albany Grease will reduce friction 12 percent more than any other lubricant made. This great percentage of less friction means 12 percent less power required and 12 percent less coal used. Now, isn't it good business to spend the few cents more for Albany Grease and bank the dollars in coal bills and repairs that Albany Grease saves for you through its 12 percent less friction?"

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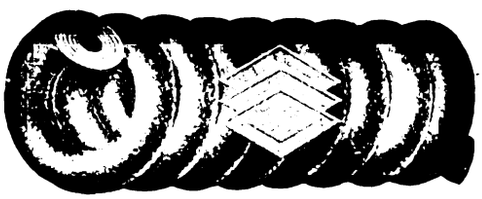
AND

VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

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Anyone interested in boiler feed pumps on board ship should write to the Alberger Pump & Condenser Company, 140 Cedar street, New York, mentioning International Marine Engineering, and ask for the Alberger Bulletin "Why."

"Refrigeration on Board Ship" is the subject of some interesting literature published by the Brunswick Refrigerating Company, 130 Jersey avenue, New Brunswick, N. J. Any of our readers interested in this subject should be sure to write to the company, and ask for the literature they published regarding marine refrigeration. These plants cool your ship's stores and make any quantity of ice you require and furnish cool drinking water. Upwards of 200 marine installations have been made, and the company states that these have proved that Brunswick installations show low fuel consumption, low pressure, freedom from repairs, ease of operation and maintenance, combined with perfect simplicity and lasting qualities.

"Steam Specialties that Have Won Their Way by Merit" is the title of a handsomely printed book illustrated in several colors, published by Greene, Tweed & Company, 109 Duane street, New York. A copy of this booklet should be in the hands of every engineer, ship builder and naval architect. One will be sent free to all of our readers who will write to Greene, Tweed & Company and ask for a copy, mentioning International Marine Engineering. The book describes "Palmetto" packing and how to test it; the use of "Palmetto" twist packing; packing for steam hammers; for ammonia pressures; how to increase the efficiency of packing under imperfect conditions; describes and illustrates high-pressure asbestos gaskets, and tells about the "Favorite" reversible ratchet wrench adopted for standard use by ship builders, engine builders, contractors, etc. Under the head "How to Test 'Palmetto' Packing" the booklet gives the following: "Owing to the heat-resisting materials of which 'Palmetto' packing is made, together with the perfect lubrication of each single strand before braiding, the claim is made that for efficiency and long life there is no piston rod packing on the market equal to it. The truth of this claim can be tested by packing one side of the steam end of a duplex pump with 'Palmetto' and the other side with the best packing you know of, and both working stroke for stroke against the same steam pressure, you will find that while you have to renew the other packing several times and is still leaking, the original 'Palmetto' has given no trouble and remains steam-tight."

Thermometers and instruments for steam generating plants are described in a fully illustrated catalogue published by the Hohmann Maurer division of the Taylor Instrument Companies, Rochester, N. Y. This company makes a specialty of thermometers for use on board ship, and any one of our readers interested in this subject should be sure to send for a copy of the catalogue. The United States Navy Department has adopted Hohmann & Maurer standardized thermometer fittings, as shown by the blue prints on pages 16 to 20 of this catalogue.

A four-cylinder triple-expansion dredge engine is described in a pamphlet just published by the American Engine & Electric Company, 25 Raritan avenue, Bound Brook, N. J. "For large ratio of expansion and therefore high economy, combined with high speed of rotation suitable for direct connection to dredge pumps, no engine can equal the American-Ball four-cylinder, triple-expansion dredge engine. Instead of three cylinders there are four, the last stage of expansion being divided between two cylinders. This increases the economy by several pounds per horsepower-hour. Nevertheless, by reason of the smaller size of the pistons and rods, high speeds are obtainable, and, furthermore, there is no pounding or vibration, because the cylinders are arranged in pairs at right angles and all inertia forces are perfectly balanced. No bracing or strengthening of the dredge is necessary."

Mr. F. Burnham McLeary, as one of his series of articles on the big industries of America, has written the story of the B. F. Sturtevant Company, "Marshalling the Four Winds for Health and Industry." This appeared in the March issue of the *World's Work*. The business started in a marvelous way—out of a cloud of leather dust. From this humble source have sprung a mighty host of air castles. As he says in his story, "You can't escape Sturtevant for very long." Every day all over the land school children, laborers in factories and the sick in hospitals are indebted to Sturtevant for clean, fresh air. In a quiet but unassuming way his fans bring vigor to the President and all with him in authority. It is a vivid tale of industrial achievement. It tells how Sturtevant knocks down the tall chimneys, saves money in the power house and helps to drive the dreadnought; how his fans shoot cotton into the cotton gins and pull it out again; how they carry tons of cotton for over a quarter of a mile. Even more remarkable are the fans that pull sparks out of smoke!"

The Sizzle and Drip

—one of the most annoying and disagreeable conditions where valves are used, can be immediately stopped by applying a

DEXTER VALVE RESEATING MACHINE

These machines are built to insure ease of operation, reliability, efficiency and durability; are positive in operation and a source of economy to every user. The saving of a few valves more than pays for the machine.

The Navy Departments of the United States, Great Britain, Japan, Russia, Brazil, Argentine and Mexico have adopted Dexter Machines for their ships and naval stations and among thousands of other users are the most representative organizations in the world.

The Dexter Valve Reseating Machine will show YOU a new road to greater economy and bigger profits. Send the coupon TO-DAY for our Catalog 1-16.

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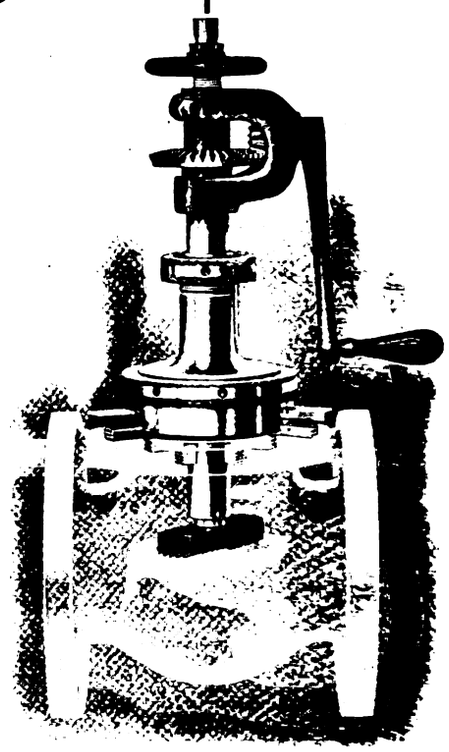

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Valves and fittings for superheated steam are described in a booklet just issued by the McNab & Harlin Manufacturing Company, 55 John street, New York. "The increasing use of superheated steam, and the high pressures and temperatures resulting from its use, has made it imperative for the manufacturer of valves and fittings to design a line of product that will give reliable and satisfactory service under such conditions. We have experimented considerably, not only conducting several physical and analytical tests, but actual tests and exhaustive investigations to assist us in producing a line of goods to meet these conditions."

Evaporating and distilling apparatus is described in Bulletin 10-D. E., just published by Schutte & Körting Company, Twelfth and Thompson streets, Philadelphia, Pa. "This bulletin illustrates and describes the type of evaporating and distilling apparatus which we manufacture. These evaporators and distillers have been thoroughly tested out and have proved themselves to be of the most efficient order, 1 pound of water being evaporated with 1 pound of steam. We have supplied quite a number of these plants, amongst them being two United States navy tugs and one United States battleship. At present we have on order plants for four United States torpedo boat destroyers, one United States battleship—the *Pennsylvania*—and also the United States destroyer tender *Melville*. If you are interested in this matter we would be pleased to give you further information."

TRADE PUBLICATIONS

GREAT BRITAIN

"Manganesite" is the title of a booklet just published by John Hudson & Company's successors, 4 Victoria Warehouses, Mansell street, London, E. "Possibly the greatest desideratum of every power engineer is the feeling of absolute certainty that the pipe joints under his control will never blow out. This is the first and foremost satisfaction that is guaranteed to all users of Manganesite. Ample proof of this statement is available; we shall quote a little of it later on."

Flexible couplings are described in a pamphlet issued by the Power Plant Company, Ltd., West Drayton, Middlesex. "The demand for reliable flexible couplings has rapidly increased of late years, since the advantages which they offer over rigid couplings have been fully appreciated. The use of flexible couplings can never justify indifferent erection of machinery. They are intended as a means whereby the effect of uneven wear of sets of bearings belonging to separate shafts may be neutralized, loss of alinement due to settling of foundation may be taken care of and vibration and shocks may be absorbed."

An improved silent-running, horizontal steam winch is described in a circular published by Clarke, Chapman & Company, Ltd., Victoria Works, Gateshead-on-Tyne. "We have re-designed our standard winches and introduced improvements in detail, and beg to draw your attention to this new design of steam winch, which we have now adopted as our ordinary standard type. The principal improvements are as follows: We have increased the side frames in weight and strength, altered the design of same, and have arranged to bolt modified design of steam cylinder onto the side of the frames instead of, what has hitherto been our usual practice, of bolting the cylinder onto the spigot at the ends of the side frames. The steam chests are designed so as to make the valve face readily accessible for examination and overhaul. The cylinders are so arranged that water runs off and cannot lodge or remain on the top and so cause corrosion. We have altered the design and increased the strength and weight of the driving wheels, and the gearing can now be either of the straight or double helical tooth type, whichever is preferred. All this new gearing is cast from specially prepared metal machine-cut patterns, so as to ensure silent running. All clutches are arranged to work on squares forged solid with the shaft. The winches are narrowed in so that less space is taken up on the deck. We are also fitting larger barrels than our late standard. and increasing the diameter of the brake, reversing weigh-bar, etc. Guards, etc., are fitted to meet the requirements of the Factory Act. Our well-known Cyclops type of winch, fitted with steel pinions, heavy link motion gear and other specialties, making it our most improved type, has also been modified in design on exactly similar lines as our ordinary standard winch, as above described. With both types we can guarantee every satisfaction, and shall esteem it a favor if you will kindly give our new type winches your consideration."

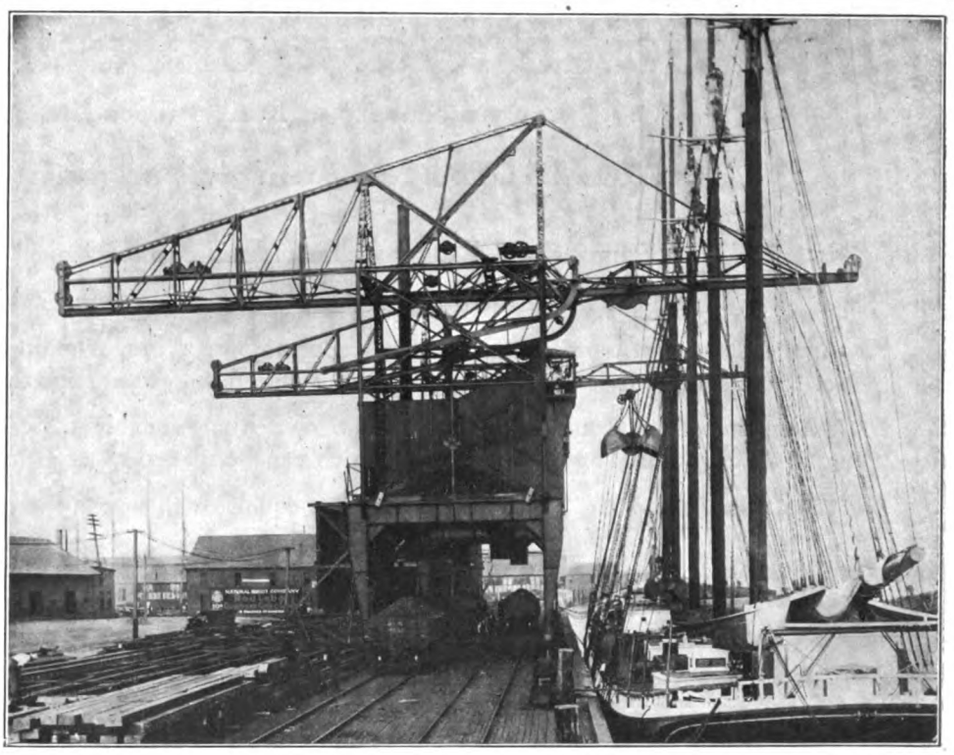
TIME IS MONEY

McMyler Interstate material handling machinery saves time in discharging or loading cargoes of any description. Package freight handled with hook block or bulk freight handled with automatic digging buckets will save YOU money.

Are YOUR terminals and docks "Up to the minute?"

Are YOU penalized on account of vessel demurrage? May we assist you in analyzing your conditions? We build plants complete for any requirements.

Bulletins on request.



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A direct-grip windlass is described in a circular published by Clarke, Chapman & Company, Ltd., Victoria Works, Gateshead-on-Tyne. This is a fully illustrated circular, and all interested in these machines should send for a copy.

The "Incanto" oxy-acetylene system of metal cutting and fusion welding is described in a circular published by Thorn & Hoddle Acetylene Company, Ltd., 151 Victoria street, Westminster, London. The catalogue states that this system of oxy-acetylene welding and cutting affords to engineers the most powerful and valuable method yet discovered of dealing simply and economically with an immense variety of metallurgical operations which have hitherto been carried out under less favorable conditions. "Autogenous welds can be effected by means of the oxy-acetylene blow-pipe without any deleterious effect upon the metal. The weld, in addition to being stronger than that obtainable from any other blow-pipe system, is also more concentrated, whilst the form being luminous, in the form of a short, steady jet, very little practice is required to make an unskilled workman proficient in the manipulation of the blow-pipe. In our patent blow pipes we employ the injector principle, and are very carefully designed and proportioned to meet all the special conditions with which an oxy-acetylene blow pipe must comply. They are perfectly safe for use, being constructed, even in the larger sizes, so that the flame cannot strike back. The gases are well mixed in the injector chamber before they issue from the nozzle of the blow pipe, and the nozzle itself is so constructed that carbonaceous deposit in the orifice is entirely obviated."

"The Isherwood Ship Construction" is the subject of a profusely illustrated series of catalogues published by J. W. Isherwood, 4 Lloyds avenue, London, E. C. "In the 'Isherwood' system of construction the transverse frames and beams are fitted at widely-spaced intervals, the general practice, so far, having established this at about 12 feet. These structures form complete transverse belts around the ship. They are directly riveted to the shell plating and deck of the vessel, and are made of not less strength than the number of transverse frames that are fitted in ordinary vessels for a corresponding length of ship. These strong transverse girder frames are slotted around their outer edges, in order to admit of continuous longitudinal stiffeners being fitted, not only at the decks, but on the sides, bottom and tank top. The fitting of these longitudinal stiffeners directly onto the plating prevents damage to the decks through buckling, which has been sustained in vesels of the ordinary construction which have had no fore-and-aft support to the plating in between the transverse beams. In vessels with double bottoms transverse floor plates are fitted intermediate to those at the sides and decks of the vessel. These intermediates enable sectional materials, such as bulb angles, being utilized as longitudinals, both at the tank top and on the outside plating, thereby providing a double-bottom construction, which is much more ready of access than one built on the ordinary system."

Patent universal angle-bending machines are described in a catalogue published by Neville's, Ltd., 7 James street, Liverpool. "To bend angles by hand with the help of bending block and vice, etc., in bar iron endwise has ever been troublesome and laborious work, and then even unsatisfactory because of the deformation of the iron and the difficulty of obtaining a sharp and accurate outside angle. Where exact sizes were necessary clinching or auto welding had to be resorted to. With our machines and without any extra parts being necessary, sharp bends, either at obtuse, right or acute angle can be readily made in flat bars end or flat-wise, on rounds, squares, T or L sections. For U or I sections, with wings, outwards or inwards, the work is done just as speedily using distance blocks between the wings. Not only plain angles but any imaginable shapes, using suitable templets, can be produced; for instance, square, volutes, ondulations, loops, rings, cramps, etc. The handling of the machines is simply a laborer's job; by means of the hand wheel in connection with the driving gear the movable parts are set so that the jaws are in line, the bar of iron is put in to adjust the two clamps to its width. The bar is then brought to white heat, put quickly against the jaws, and by turning the hand wheel the desired degree is bent. The contracted material goes to thicken the elbow, increasing its strength and permitting an almost sharp outside angle. The superfluous iron is prevented from rising by taps from a hammer during the process. The work where required can be dressed on an anvil while still hot."

The Most Dreaded of Sea Perils is Fire

Early discovery of fire removes the peril.

The AERO AUTOMATIC System gives immediate notice of fire.

Practical service proves "AERO" to be the most adaptable, efficient and reliable system in use.

A fine copper tube is threaded throughout the ship including all cabins and compartments.

The rapid rise of temperature always accompanying a fire, whether from a smouldering start or spontaneous combustion, causes the air in the tubing to expand throughout its entire length.

A sensitive diaphragm at one end in the switchboard cabinet swells out closing an electric circuit, thus operating all the signals which can be placed in as many places as desired.

One watchman with "AERO" installed, is equal to ten where there is no "AERO."

Fire Underwriters, Steamboat Inspectors, Marine Architects and Builders endorse the System.

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AERO FIRE ALARM COMPANY

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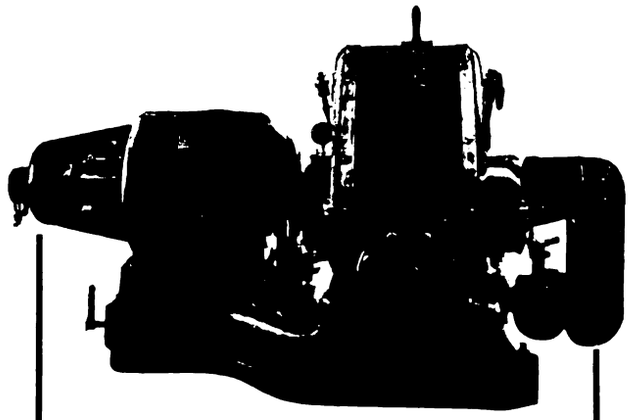
TERRY MARINE TURBINE



By reason of its compactness, light weight, freedom from vibration and close regulation, the new

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marine lighting set (Type GM) establishes a new standard for this service.

Designed so that it can be arranged to exhaust into the closed feed-water heater, to the low-pressure receiver of the main engine, to the main condenser, to the auxiliary condenser, or overboard, this 25 kilowatt set is entirely self contained, rugged, reliable in operation, with low maintenance cost and high economy.

Where conditions are unusually severe forced feed lubrication is supplied in addition to the usual ring oiling system. An emergency governor provides absolute safety and the Terry horizontally split casing allows quick, easy inspection without disturbing alignment or steam and exhaust piping.

Write us for further details.

(T-133)

The set weighs 3400 lbs.
runs at 3000 rev. per min.
and gives current at 125 volts.

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British Agents for Marine Forced Draft Sets - - Yarrow & Co., Ltd., Scotstoun, Glasgow.

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The Thermofeed differential pump governor is described in a handsomely printed catalogue issued by Ronald Trist & Company, Ltd., 4 Lloyds avenue, Coronation House, London. The Thermofeed differential governor is a device which shuts off the supply of steam to any class of steam or power-driven pump at such time as the pressure becomes excessive—the excess sufficient to stop the pump being anything from 3 pounds per square inch upwards. It also admits a supply of steam to the pump, by opening the double-beat throttle valve, upon any predetermined lower pressure being attained. As a concrete example, suppose a pump was working at a pressure of 100 pounds per square inch, with the 'kick' or 'throb' of the pump, say, 108 pounds, then at 110 pounds the double-beat throttle valve would immediately close and stop the pump, and until the pressure dropped in the pipe line to, say, 90 pounds per square inch, the pump would not start again. Whenever the pressure drops to that figure the steam is instantly admitted to the pump."

BUSINESS NOTES

AMERICA

A LARGE ORDER from the United States Government has been received by the Kingsford Foundry & Machine Works, Oswego, N. Y. The permanent pumping stations at Miraflores and Ancon, in the Canal Zone, will be equipped with fourteen Kingsford high-efficiency centrifugal pumps, aggregating 2,200 horsepower. All these units will be equipped with Kingsford auto water-balancing devices. The government accepted these in place of the marine thrust bearings originally specified.

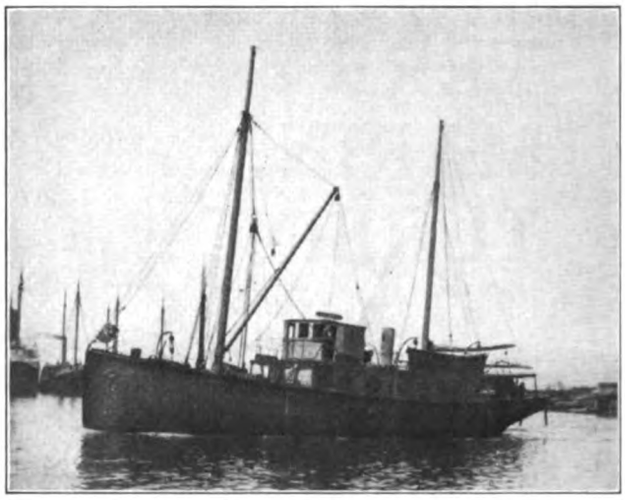
ACTION OF SEA WATER ON CONCRETE.—More than twenty concrete piers built several years ago by the Aberthaw Construction Company, and submerged in the United States navy yard at Boston, are again being examined to note the action, both mechanical, due to frost, and chemical, due to ingredients in the sea water. As this subject is one which has a large bearing on the permanence of piers, abutments, sea walls, etc., when built of concrete, these experimental tests are expected to yield some very valuable results.

THE C & C ELECTRIC & MANUFACTURING COMPANY, Garwood, N. J., announces that the Indianapolis territory will temporarily be taken care of by the Cincinnati representative, Mr. F. A. Saylor, whose office is Sixth and Vine streets, Cincinnati, Ohio. Mr. Saylor is prepared to give any information necessary regarding the C & C arc welding outfits for all purposes. He also carries in stock a 28-page Bulletin B-4001, which gives a great deal of very important data and pictures showing the remarkable work done by this company's electric welding processes.

THE WHEELER CONDENSER & ENGINEERING COMPANY, Carteret, N. J., has opened an office at 122 Board of Trade building, Montreal. This office will be under the management of Mr. Joseph McKay, Jr., who has been for several years New York manager of the Wheeler Company. This company makes a specialty of surface and jet steam condensers complete with auxiliaries for all conditions, as well its product consists of forced and natural draft water-cooling towers, feed-water heaters, evaporating apparatus and special castings for chemical industries.

INCREASED FACILITIES.—The necessity for larger space and better facilities to handle their increased business has compelled the Indianapolis and Louisville branches of the H. W. Johns-Manville Company, main offices at Madison avenue and Forty-first street, New York, to seek larger quarters. The new address of the Indianapolis branch is 408-410 North Capitol avenue, that of the Louisville branch 659-651 South Fourth avenue. Both of these branches will include ample warehouse accommodations, in addition to show rooms for the display and sale of this firm's varied line of asbestos roofing, pipe coverings, insulating materials, lighting fixtures, automobile accessories, etc.

NEW STANDARD ENGINE SALES ROOM.—A new exhibition and sales room for Standard engines has been opened in Boston at 99 Haverhill street. This will be in charge of Louis T. Carey. Mr. Carey is well known as a practical marine engineer, and the practical service he can render to Standard customers will be valuable to them. He has recently spent a couple of weeks at the Standard plant, 172-180 Whiton street, Jersey City, N. J., familiarizing himself with the latest developments and shop practice. A representative line of Standard engines and Standard oil engines will be carried at Boston, which will further help Mr. Carey in his work of being of service to buyers and customers.



Capt. Eben Low's 79 ton freighter, originally 80 H. P. Steam, now 125 H. P. STANDARD

$320.00 A WEEK INCREASED PROFITS

Carries 40 tons more.
Revenue per ton, $2.00.
Trips made, 4 a week.
Additional revenue, $320.00 per week.
And besides, boat makes 2 miles more per hour.
Saves 6 cents per mile in fuel.
Saves $150.00 a month from discharged firemen.

Capt. Low's figures bring up a number of points which must be figured in every small work boat. Write for further facts on

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STANDARD MOTOR CONSTRUCTION COMPANY

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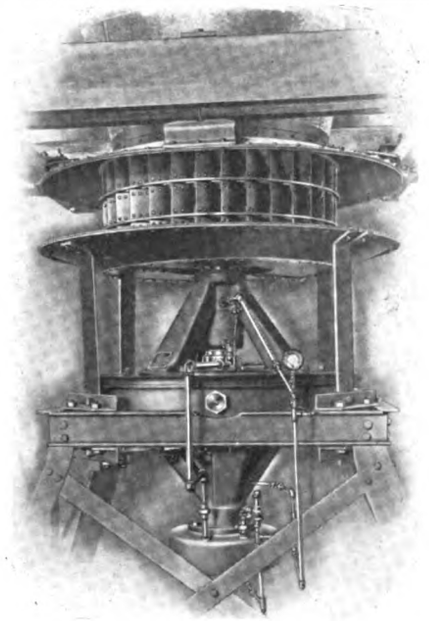
The Link-Belt Company, manufacturer of the Link-Belt silent chain drive for the transmission of power, elevating and conveying machinery, locomotive cranes, power house conveyors for coal, ashes, etc., announces the opening of an office in Detroit, Mich., Room 911, Dime Bank building. Mr. L. W. Longan, formerly connected with Chicago and Indianapolis works of the Link-Belt Company, has been placed in charge.

A free can of metal polish is offered by The Texas Company, 17 Battery Place, New York, to every user of lubricants who will write to the company, mentioning International Marine Engineering, and give his own name and address, the name of the firm for which he works, his position with this concern and the kind of lubricant he is now using. The can of metal polish offered free weighs half a pound, and is called the "Qckwork" metal polish.

The Terry Steam Turbine Company, Hartford, Conn., has made arrangements with Fraser & Chalmers, Ltd., whose head office is at 3 London Wall buildings, London, whereby their organization will handle Terry turbines in England and the Colonies, with the exception of Canada. This arrangement does not include marine forced draft sets, which are handled by Yarrow & Company, Ltd., Scotstoun, Glasgow, as heretofore.

Record of Operations with Lidgerwood Cableways.—Mr. Charles H. Locher has handled 6,235,000 cubic yards of material with Lidgerwood cableways while connected with various contracting firms as partner. This represents a mass three times as large as the concrete placed by Lidgerwood cableways in the Gatun Locks at Panama, the largest mass of concrete in existence. The following comprises the operations in which Mr. Locher has used Lidgerwood cableways, together with the amount of material handled in each case: Chicago Drainage Canal, 1,700,000 cubic yards; West Neebish Channel, St. Mary's River, 1,700,000 cubic yards; the Livingston Channel, 1,700,000 cubic yards; Hydro-Electric Development, James River, 100,000 cubic yards; Western Maryland Railroad, 35,000 cubic yards; Wachusett Dam, 400,000 cubic yards; New York State Barge Canal, to date, cableway still at work, 600,000 cubic yards.

Progress and Efficiency in Lifeboat Equipment.—Since the full text of the new regulations prescribed by the International Convention on Safety at Sea has been published, steamship owners and those interested will find many new requirements, which, as a whole, mean that the question of ship's construction as well as the lifeboat equipment will have to be dealt with in a thorough and systematic manner, and tend to enforce the use of only the best and most efficient devices obtainable for actual rescue work at sea. As only fifteen months' time has been given shipowners in which to comply with the new regulations, a few remarks to serve as guidance with regard to up-to-date lifeboat equipment may be timely and of interest. The Welin Marine Equipment Company, Long Island City, N. Y., sends us the following account of some of the work it has done in this line: "This company was formed in 1906 by Capt. A. P. Lundin, who previously had followed the sea for twenty odd years and sailed in all kinds of ships from sailing vessels to ocean liners. Experience has taught him that one of the first needs for greater safety at sea was better appliances for launching lifeboats from shipboard; his first step, therefore, was to gather data on all types of ships' davits and obtain options on patents for such as seemed worthy. After due consideration and experiment, it was decided that the Welin Quadrant Davit was in every way the most desirable boat-launching apparatus on the market, and accordingly the patents for America were acquired from the inventor, Axel Welin. During the year following, the new company had opportunity to take over an old-established boat building plant, called the Lane & DeGroot Company, which had for some months been in the hands of a receiver. From that time on Capt. Lundin's company made headway, and many improvements were involved in Welin davits as well as in the construction, design and manufacture of lifeboats, life-preservers and accessories, such as blocks, davit falls, lowering bollards, lowering controls, ships' cranes, chock and gripe releases. Yet, despite all improvements and progress in manufacturing such apparatus, Capt. Lundin states that what is as necessary for safety at sea as good boats and gear is to hold actual boat drills at sea instead of the more or less make-believe drills as now conducted, for he realizes that without properly trained men to launch and handle the boats the best equipment in the world may prove unavailing in time of disaster. Next to efficiency



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For Marine Use

This illustration is one of sixteen sets which we have recently built on one order for the United States Torpedo Boat Destroyers, **SMITH, LAMSON, WORDEN** and **MACDONOUGH.**

These fans maintain a 5-inch static pressure in a closed fire room and furnish draft for oil burning. They are self-contained, united with two extra large bearings, and of most rigid construction to take care of strain from excessive pitching and rolling.

Note the solid bucket, one-piece turbine roter. The process of building same is our patent and makes the most durable turbine in the world.

Get in touch with us on all marine forced-draft work. You cannot go wrong on our engineering or apparatus on this work.

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the most important quality in life-saving apparatus is durability, or, in other words, everything must be so constructed that a minimum amount of up-keep can be depended on, for such equipment very often does not receive the care and attention due it, and if the material of which it is made deteriorates easily, as in the case of folding canvas lifeboats, it may be found actually useless in time of need. Therefore, the best of material and the highest skilled workmanship are essentials in the manufacture of real life-saving apparatus. The feature of economy may be said to be covered in the foregoing paragraph, since 'durability' spells 'economy' in the end, but additional economies may be effected if the life-saving equipment is made to fit the ship, instead of having to make the ship fit the equipment. Capt. Lundin is becoming more and more convinced that the metallic lifeboat has the same advantages over wooden boats that the modern steel-constructed Pullman has over the old-fashioned wooden railroad cars. Many of the European steamship owners still favor the wooden boats. The reason therefor is to be sought in the fact that metallic lifeboat construction in Europe has not yet reached the high development which it has attained here in the United States, probably owing to the inferior metal and lack of regulations leaving a wide latitude as to construction of lifeboats. This is very evident when we consider that most European ships carry wooden boats, whereas here in America metallic boats are in general use, and are given the preference by steamship operators. The lifeboat expert cautions particularly against the danger of using wooden boats of a double deck or well type, with independent tanks, because such boats are usually not required to have more tank capacity than an open boat of the same size, and therefore 75 percent of the space between the two bottoms is simply left open and not subdivided at all. Now, if such a boat should be thrown against the ship's side while being launched, and the bottom punctured or the planking so strained that it leaks considerably, or the bottom leak, as is often the case, from long drying out under a tropical sun, the open space between the double bottoms will fill up before the occupants of the boat realize what has taken place. The buoyancy of the boat will be reduced to one-quarter and the boat's stability seriously impaired, which makes her a most dangerous boat. The filling of a boat's double bottom with cork does not make her in any way safer, as there will always be room for enough water to impair her stability. On the other hand, the cellular bottom of a metallic lifeboat is so divided by watertight bulkheads that even if it should be punctured only a small percentage of the buoyancy factor would be affected. Capt. Lundin considers one of the most essential features in any type of lifeboat—whether open, decked or housed in, propelled by oars or motive power—is that it should be of such size and design that it can easily be pushed off from the ship and controlled by oars, even though only temporarily. As can be seen from brief descriptions under the various cuts this is being carefully looked out for, and it is also featured in the new housed-in boats which are designed particularly for such waters as our Great Lakes, where many people are frozen in the lifeboats after they succeed in getting away from their sinking ship. These housed-in lifeboats will be found very useful in rough, cold weather, and this is especially so of the motor boats. Welin Quadrant Davits are already well known and do not need much introduction, when we consider that during the last twenty years some 2,000 or more different types of davits have been patented and the greatest efforts made to put them on the market. The Welin davit is the only one which has been adopted; moreover, its introduction was effected at a time when there were no strict requirements or regulations on launching, and the old round-bar davits sufficed to meet those in force, the latter costing only about one-third as much as the Welin davits. As can be seen from the rules and regulations agreed upon by the International Conference on Safety at Sea, a wide margin has been left open for the acceptance of cranes and other appliances that might take the place of the davits, particularly with a view of making it possible to launch the same lifeboats on either side of the ship or preferably on the lee side when she ship is listed. Capt. Lundin had this in view several years ago, and in August, 1908, filed an application for such an electric crane device capable of taking care of a large unit of lifeboats, on which patent has just recently been issued, No. 1,086,309. Of course, the disadvantages of such large units are that in case of a collision or other outside damage, one or more of such large electric cranes would put out of commission a large number of boats. At the same time there is no question but that on very large ocean liners a few of such large electrically-operated davit cranes would come in very handy, particularly where the deck space is available and the boats can be stored all the way across the deck in the way of the cranes."

COX & STEVENS

15 WILLIAM STREET, NEW YORK

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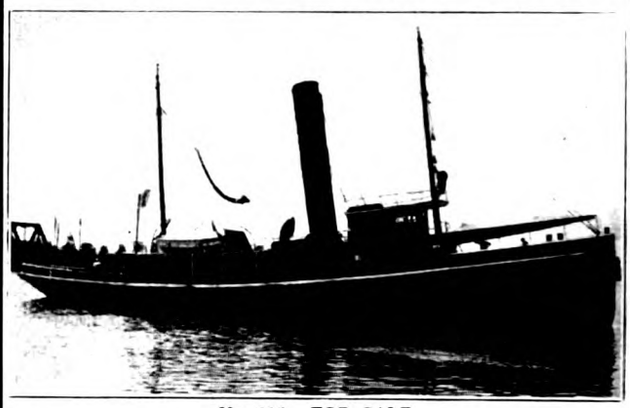
No. 524. FOR SALE OR CHARTER

Passenger Propeller, 90'x22'x7' draft Compound Engine. A bargain.



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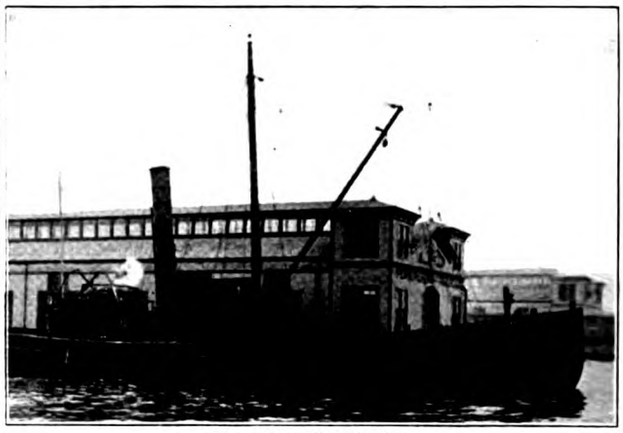
Sea going Steel Tug, 136' x 26' x 15', Triple Engine, Scotch Boiler. Excellent condition.



No. 957. FOR SALE

Steam Lighter, nearly new, 120' x 29' x 11', draft. 9'-6", Compound Engine. Excellent condition.

The above illustrate a few desirable vessels for sale. We have a large list of all sizes and types. No charge for information. Write and tell us what you want. COX & STEVENS, 15 William St., New York.

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Advertisements will be inserted under this heading at the rate of 4 cents (2 pence) per word for the first insertion. For each subsequent consecutive insertion the charge will be 1 cent (½ penny) per word. But no advertisement will be inserted for less than 75 cents (3 shillings). Replies can be sent to our care if desired, and they will be forwarded without additional charge.

Diesel Marine Engine Construction.—A European engineer, who for the last six years has specialized on Diesel engine construction with most modern European factories, desires position as chief technical leader for the Diesel engine department with an American shipyard or engine works located in a coast city. He is at present engaged in Europe, but desires to find a progressive firm that not only wants to build motors up to largest usual powers, but is willing to go still farther. No licenses. Own designing. Address *Diesel Engineer,* care INTERNATIONAL MARINE ENGINEERING, 17 Battery Place, New York.

CEDAR MOORING BUOYS.—Mooring buoys that are finding an excellent sale are the "Never-Sink" cedar mooring buoys, manufactured by Jordan Bros., Norfolk, Va. These buoys are made in any size, but the sizes that are carried in stock are 5, 7, 10 or 12 feet. Anyone in need of a mooring buoy will do well to communicate with this concern.

INGERSOLL-RAND PNEUMATIC TOOLS.—George A. Gallinger, Pittsburg, Pa., has been placed in charge of the pneumatic tool department of the Ingersoll-Rand Company, with the title of manager of pneumatic tool sales. His headquarters will be at 11 Broadway, New York. After an experience of twelve years in developing a general line of pneumatic tools the Ingersoll-Rand Company felt warranted in establishing this special department and in placing at the head of it a man who understands the business from a mechanical as well as a commercial standpoint. Mr. Gallinger's time and service are at the disposal of those contemplating the use of pneumatic tools, and his long experience and practical knowledge commend him to the best consideration and interest of the trade in general.

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Marine Machinery

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25 Years On The Job

Twenty-Five years is a long time—a quarter of a century—and being the last quarter of a century it means that there have been more and greater changes than in any previous thousand years of mechanical advancement. Machines have changed, telephone, automobile, aeroplane and wireless have been made practical, steam pressures have increased for *some* service but soft packings are still used and will be always for there is nothing that holds flange joints tightly, where there is expansion and contraction like good old *Rainbow* Packing. "*Rainbow*" has not changed in the least in twenty-five years. It is still the good pure Para Rubber secretly compounded packing that has held in some cases for over seventeen years—and good when taken out.

All Rainbow Packing is *red*—all red packing is *not* Rainbow In placing your order insist that your red packing bears this trade-mark and you will get the genuine.

RAINBOW RAINBOW RAINBOW

Manufactured Exclusively by **PEERLESS RUBBER MFG. CO.** **16 WARREN ST. NEW YORK**

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TRADE PUBLICATIONS.

AMERICA

Helpful hints on cleaning files, and otherwise making them wear long, are given in *File Filosophy,* published by the Nicholson File Company, Providence, R. I. A copy of this booklet will be sent to any of our readers upon request.

A compensated quadrant crane is described in a vest-pocket-size pamphlet just published by the Welin Marine Equipment Company, 305 Vernon avenue, Long Island City, N. Y. "The compensated quadrant crane is a derrick crane with a jib or girder that can be raised or lowered, and without an upright beam or mast. It is the invention of Capt. A. P. Lundin and Axel Welin, whose patent quadrant davit, operating on the same basic principle as the crane, has been recognized for some years as the standard in davit efficiency. The lower end of the jib is in quadrant form, so arranged that it may roll in a groove, with teeth which engage in a rack. The actuating screw swings the quadrant by means of a nut which slides on a guide at the top of the stationary central frame. The quadrant arrangement enables the shortening of the jib, and reduces its bending moment, on account of the traveling fulcrum along the base of the frame. The strain on the beam and on the screw is also materially reduced thereby. There are two different compensating devices employed, by means of which the load travels practically in a horizontal line when the jib is raised. As a result of this, very little power is needed to raise the jib, only a small fraction of the power being required compared with what other types of cranes need for the same operation. The motive power is attached directly to the crane, thus making it a self-contained unit. This does away with the inconvenience, delays and expense incident to the use of winches which are connected to the crane by cables. The saving in time and power resulting from this is self-evident. There being no guys or stays to interfere, the crane can swing to any point within its radius, and is not confined to a slewing angle, as is true of most types of cranes. The compactness of the crane is of particular advantage in nearly all uses for which cranes and derricks are required. Because of its direct control and improved construction, the compensated quadrant crane can, in all cases, do more work at less cost in a given period than any other type of crane."

Brownhoist tram-rail systems, trolleys and electrical hoists are described in Catologue R just published by the Brown Hoisting Machine Company, Cleveland, Ohio. "The overhead or tram-rail system of handling all kinds of material is being installed by all modern industrial plants and railroads. Because it has been proven that a great saving can be made with this system in both large and small installations. We have been building these systems complete for thirty-three years, being one of the first manufacturers in this line. In this catalogue we show the different Brownhoist trolleys and electric hoists, which are used on our tram-rail system. We are in a position to quote on complete tram-rail systems, and will be pleased to submit information and estimates on receipt of inquiries."

Rope hints for boat owners is the subject of an illustrated pamphlet of 20 pages issued by the Plymouth Cordage Company, North Plymouth, Mass. "The far-sighted yachtsman or motor boat man never neglects to take along suitable ground tackle. It is as vital as compass and chart. You may be dismasted, or your engine may balk. You may get into a tight place from any one of a lot of causes, but given a sound bottom under your feet, reliable anchors and reliable lines constitute pretty good insurance against serious trouble. This need for suitable and reliable ground tackle applies to the boat which cruises inshore just as much as to sea-going craft. In fact, it is along shore that the sort of situation is most often found which calls for ground tackle. There is nothing worse than to be disabled on a lee shore. Then is the time when a good solid anchor and a few fathoms of stout manila are the only things that fill the bill. With your cable well made fast, there's a heap of satisfaction in seeing everything holding while you make repairs. Don't neglect your ground tackle because your boat is a small one or because you don't go to sea. Every yacht and motor boat should carry at all times the necessary equipment for meeting emergencies. The man who fails to provide these things simply invites trouble. The man who attends to them and goes out in shipshape fashion makes his sport safer, gets more real enjoyment from it and feels, besides, a personal pride in the efficiency of his boat. As a help to our many boating friends, we have prepared the tables on page 5 covering suitable ground tackle for different-sized craft. They are the combined result of close study of all information published on the subject and of an extended personal investigation in which ten principal boating centers, typical of as many sections, were considered."

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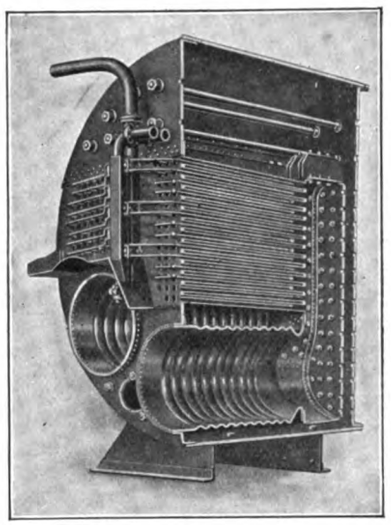
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

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LOCOMOTIVE SUPERHEATER COMPANY, 30 CHURCH STREET, NEW YORK
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Valuable Graphite Products is the title of booklet No. 75, published by the Joseph Dixon Crucible Company, Jersey City, N. J. According to this booklet, by the use of Dixon's flake graphite mixed with oil, bearings can be kept in perfect condition and will never run hot, as by its use a lubricating veneer of pure graphite forms between the bearing surfaces.

The Stow two-spindle drill, which is stated to be the only tool of its kind on the market, is described in publication 88 published by the Stow Manufacturing Company, Binghamton, N. Y. "No. 1 spindle, fitted with Jacobs chuck, taking S. S. drills 0 to 1½ inches; speed 450 revolutions per minute. No. 2 spindles takes M. T. drills 0 to ¾ inch, inclusive; speed 225 revolutions per minute. At a small additional charge it can be arranged to remove the chuck from the small spindle and attach same to larger spindle. Advantages of the two-spindle drill over the two-speed with one spindle are manifold. Among the more important are: Greater power for heavy drilling from large spindle; the ease with which either spindle can be reversed (a great advantage in light tapping, etc.); its adaptability for the use of either S. S. or M. T. S. drills. Sent on thirty days' trial to responsible parties."

Giant cranes are the subject of a catalogue issued by Neumeyer & Dimond, 82 Beaver street, New York, representing Deutsche Maschinenfabrik, ag Duisburg, Germany. This concern has been engaged in the construction of hoisting appliances since the year 1830, and the statement is made in the catalogue that it has built more than half of all the giant cranes in the world. In the catalogue mentioned, which is a handsome volume of 116 pages, printed in two colors and profusely illustrated by half-tone engravings, are shown only cranes of over 25 tons capacity, for harbors, docks and shipyards. It was the purpose of the Deutsche Maschinenfabrik, ag Duisburg, when issuing this volume, to provide a book of reference for engineers of ship yards, docks and harbors, for use when they are confronted with the task of modernizing or increasing the existing crane plant. At the same time this collection of cranes, arranged according to their respective ages, shows what development giant cranes have undergone, and how rapidly the dimensions of these cranes have grown during the last few years. A copy of this book should be in the hands of every engineer interested in the subject of hoisting appliances, and one will be sent free to any of our readers mentioning INTERNATIONAL MARINE ENGINEERING.

Steam shovel and dredge chain, made by the Hayden-Corbett Chain Company, Columbus, Ohio, is described in a circular the company has just issued. This chain is manufactured especially for use on steam shovels, dredges, cranes, wrecking cars, derrick work, etc. "The iron we use for this grade of chain, which we term our 'Special Dredge,' is made from a specially selected mixture of all-puddled pig muck iron, triple refined, rolled and rerolled into uniform, tough and fibrous finished bars; entirely free from any admixture of scrap material; being sufficiently ductile to stand severe shocks without crystalizing, and at the same time having the hard and tough wearing qualities necessary for steam shovel and dredge chain usage. This iron is subjected to chemical analysis, as well as the most rigid physical tests while being made at the mill, and again carefully inspected before going to the chain maker. This iron is made under our own formula and specifications, to stand a tensile strain of 45,000 to 52,000 pounds per square inch, having an elongation under breaking tests of 25 percent to 30 percent in 8 inches, an elastic limit of about 65 percent and reduction in area of 40 percent to 47 percent. The welding of our 'XX' steam shovel and dredge chain is entrusted only to our most experienced workmen, and none but those thoroughly competent and reliable are permitted to make this high-grade chain. We have an arrangement with the chain makers whereby they inspect the iron carefully when preparing to make the welds, and if a link is found that shows any defects it is laid aside, and the chain maker is paid for them just the same as if they had been welded into the chain. We have installed in our works one of the latest improved hydraulic testing machines of 300,000 pounds capacity. This machine is approved by the United States Government, and tested and certified to by Lloyd's Association of London, England. Our 'XX' steam shovel and dredge chain is proof-tested to the strains shown on the opposite page, carefully inspected before being shipped and test certificate furnished with the invoice. Our chain may be put in use on a steam shovel, dredge, crane, wrecking car, etc., with full confidence that it is the very best in every respect that we can produce. Our hoisting chains are proving entirely satisfactory in all kinds of work—iron ore, rock, shale, gravel, clay, etc. The number of cubic yards handled being exceedingly high, and in some instances breaking all former records."

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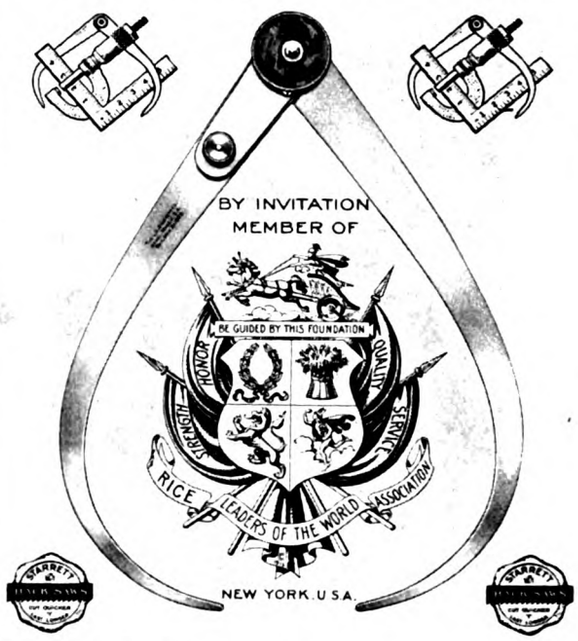

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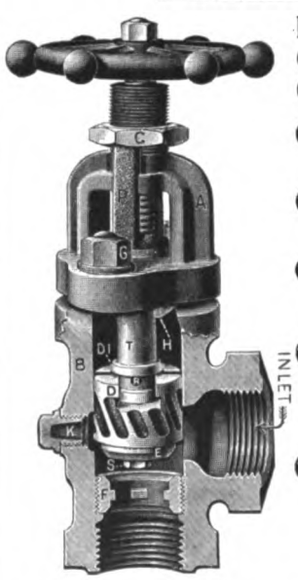

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Clamp Pamphlet No. 106 is a valuable booklet on drop-forged clamps for all purposes, published by J. H. Williams & Company, 63 Richards street, Brooklyn, N. Y. These clamps are made in seven sizes with a capacity up to 12 inches. The pamphlet states: "We know that you have been paying the price too long for cast iron or steel clamps which you cannot depend upon, and that in the new Williams drop-forged, heat-treated (toughened), 'light-service' clamp you will get a lifetime of unquestioned service and satisfaction at a low price."

Hydraulic jacks are described in a 16-page, profusely illustrated, catalogue just issued by the Watson-Stillman Company, 50 Church street, New York. "Our line of hydraulic tools is so general and the illustrations of the various machines so numerous that we find it convenient to divide the tools into classes, making each class the substance of a catalogue. At the back of this book is a list of these classified catalogues, any of which will be mailed upon application. We have built a great number of special tools which cannot be included in our general classes and are therefore not advertised. If the manufacture of your products demands a special apparatus we would remind you that our large equipment and experience have particularly qualified us to design and build the best tool for your requirements."

"The most dreaded of sea perils is fire," is the statement made in a pamphlet published by the Aero Fire Alarm Company, 60 Church street, New York. "Early discovery of fire removes the peril. The Aero automatic system gives immediate notice of fire. Practical service proves Aero to be the most adaptable, efficient and reliable system in use. A fine copper tube is threaded throughout the ship, including all cabins and compartments. The rapid rise of temperature always accompanying a fire, whether from a smouldering start or spontaneous combustion, causes the air in the tubing to expand throughout its entire length. A sensitive diaphragm at one end in the switchboard cabinet swells out, closing an electric circuit, thus operating all the signals, which can be placed in as many places as desired. One watchman with Aero installed, is equal to ten where there is no Aero. Fire underwriters, steamboat inspectors, marine architects and builders endorse the system."

An electric hoist is described in a 32-page pamphlet just issued by the Sprague Electric Works, 527 West Thirty-fourth street, New York. It is stated to be especially useful in machine shops, shipyards, etc. The company's S-1 Hoist is described as follows: "This hoist is entirely enclosed and protected from dust and moisture. It is built both for direct-current and polyphase alternating-current circuits. Any one of a number of controllers and trolley carriages may be used in connection with it so that a great variety of applications is possible. This design is suitable for use out of doors without additional protection, and is entirely satisfactory for dusty and exposed locations. The adjustable upper limit furnished is of great value, as it can be easily and quickly set to automatically stop the hook at any desired height. The load brake with which this hoist is equipped, in addition to the regular service brake, prevents excessive acceleration of the load in lowering. The hoist is supplied with a traveling rope guide, designed to keep the rope in the drum grooves regardless of side pull. Direct-current machines may be equipped with a special controller to produce the slow speeds necessary for foundry service, or with ordinary rheostatic controller for moderate speed regulation."

"New York to Colon" is the title of the leading article in the April number of *Plymouth Products*, published by the Plymouth Cordage Company, North Plymouth, Mass. A copy of this pamphlet will be sent free to any of our readers upon request. "Towing jobs of 2,000 miles are no longer uncommon, but they are, none the less, mighty serious business. When one of these jobs is undertaken in the blustering winter months, the hazard is particularly great. It behooves every careful rope buyer to note what tow-line is relied on at such a time. Our two cover pictures this month show scenes connected with the departure from New York, Feb. 17, of the Government's dredge *Gamboa* in tow of the ocean-going tug *M. E. Luckenbach*. This dredge, valued at $350,000, safely reached its destination, Colon, Panama, on March 16. Few, if any, concerns have had wider experience with long-distance towing than the Luckenbach Wrecking Company, which had charge of the *Gamboa*. As usual, they selected Plymouth for the work, choosing in this instance an 11-inch, 225-fathom line, supplied through our New York agents, Baker, Carver & Morrell. The confidence bred by the continued use of Plymouth rope on difficult towing work is evidenced in the fact that for the above job only one new line was taken along. And it did the work."

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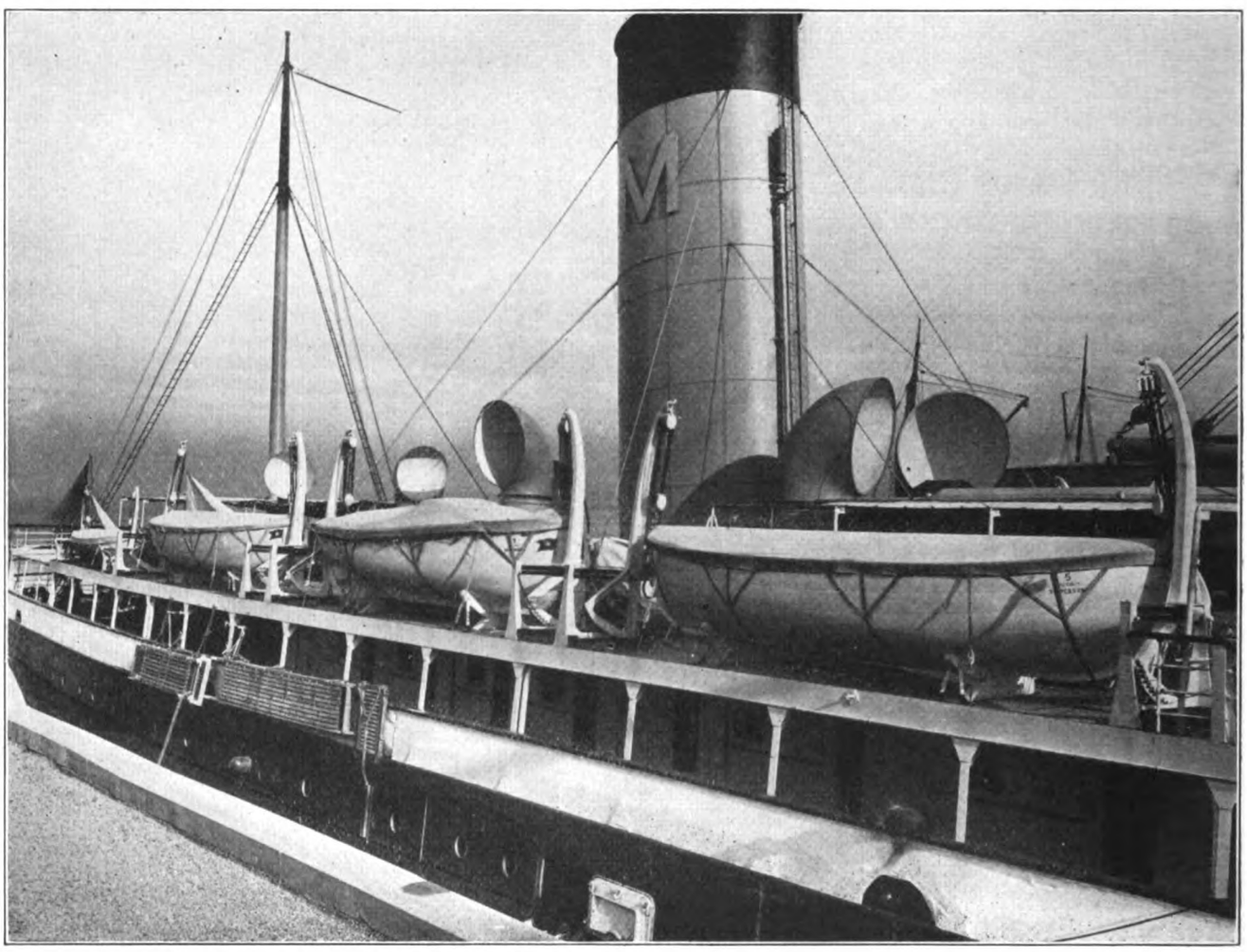

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"A Triplex Block for Boat Owners" is the title of a booklet just published by the Yale & Towne Manufacturing Company Company, 9 East Fortieth street, New York. "The new rules adopted by the American Power Boat Association, requiring the weighing of motor boats, has necessitated the production of special weighing devices. The Triplex block, combined with the Fairbanks single-point suspension scale, has proved most convenient, reliable and inexpensive."

The "P & H" grab bucket is described in Bulletin No. 101 published by Pawling & Harnischfeger, Milwaukee, Wis. "Several years ago we were requested by a large and extremely busy steel foundry to rebuild one of their cranes for grab bucket service to handle loose sand in the foundry. It was stipulated at the time that such rebuilding of crane must not interfere with its regular daily service, as the crane was badly needed at all times, and, furthermore, that such changes when completed should not impair the regular hook service of the crane. These apparently almost impossible conditions were solved by designing and constructing a special grab bucket exactly suited to their needs, and so arranged that the bucket could be readily attached or detached from the hook of any crane of sufficient capacity, no special hoisting apparatus being necessary. The opening and closing of the ordinary grab bucket, commonly termed a two-line bucket, is accompanied by means of two separate hoisting cables attached to two distinct and separately operated hoisting-drum mechanisms; by hauling on one of the cables the bucket is closed, and is then hoisted to the desired position, when, by transferring the weight of the bucket to the second cable and relieving the strain on the first one, the bucket opens by reason of the weight, of certain moving parts of the bucket itself. The 'P & H' bucket distinctly differs from the above, inasmuch as it dispenses with the necessity of the second hoisting cable and its consequent hoisting mechanism, and is therefore justly called a one-line bucket, although this line may consist of two parts of rope operating in unison and taking an equal strain. If no provision were made against it the opening and closing of a bucket of this type would product a considerable shock. To overcome this undesirable feature we have not only provided the bucket with pneumatic shock absorbers but have made the moving parts balance each other. This shifting of weight not only eliminates the shocks but also makes the bucket more effective in digging molding pits or unloading hard-packed sand from freight cars."

"Beaver Board," which is stated to be especially adapted for use on board ship, is the title of an illustrated 32-page catalogue published by The Beaver Companies, Buffalo, N. Y. Beaver Board is a wood fiber wall board, manufactured entirely from selected wood, reduced to fibrous form and pressed into panels with a uniform thickness of about three-sixteenths of an inch. Three steamers which ply between San Francisco, Sacramento and Stockton have been fitted out with Beaver board. These three steamships are the *Captain Webber*, the *Fort Sutter* and the *Capitol City*. The Beaver Companies have a designing and decorating department, and this department will at any time, if furnished with drawings or blue prints of cabins, staterooms, smoking rooms, etc., that go to make up the different compartments of a steamer, estimate the quantity of Beaver board required for each room and cabin, and also submit a sketch showing the most harmonious panel arrangement for each individual room. This service is free of charge and is given with no obligation whatever.

Holmes metallic packings are described in a 40-page catalogue published by the Holmes Metallic Packing Company, Wilkes-Barre, Pa. These packings are in successful use on pistons, dynamos, valves, ice machines, circulating engines and pumps on a large number of steamships and steam yachts. A list of these installations will be sent to any engineer interested. "The Holmes patent improved metallic piston rod and valve stem packing is not a new metallic packing, but we are determined to supply the consumer with the best packing on the market, and at prices that will cause it to be used and its merit substantiated. This packing is in use on marine, stationary and locomotive engines, and is pronounced by expert engineers to be the best packing for the above purposes that has ever been put on the market. All mechanical engineers and engine builders acknowledge that a great loss of power is caused by friction on the rod from the use of fibrous packing, or soft metal rings that are compressed on the rod by screwing up the gland so tight as to prevent the escape of steam. The use of fibrous packing also wears the rod out of round and uneven, and in some cases scores or scratches the rod or valve stem so that it necessitates its being taken out and turned, in order to keep it tight. There have been several metallic packings brought out which have had more or less merit, but Holmes packing not only possesses all the merits of former productions, but is an up-to-date article, unexcelled in its wearing qualities, taking second place to none."

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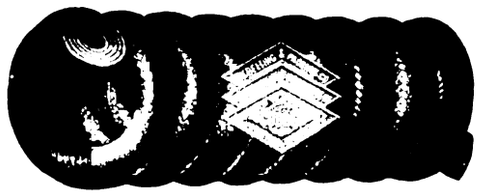
VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

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"The Polyphase-Duplex Slide Rule" is the title of a folder issued by the Keuffel & Esser Company, Hoboken, N. J. "The Polyphase-Duplex slide rule is a combination of our well-known Polyphase and Duplex slide rules improved by the addition of several special folded scales by means of which the rule is adapted to problems involving exponentials, reciprocals and extended combinations of factors. Slide rule computations are always more or less approximate, because of the difficulty of taking exact readings, and while the slight errors arising from this cause usually balance to a certain extent in extended computations, they are equally liable to multiply. A slide rule by means of which extended calculations can be performed with the fewest possible settings must consequently be more reliable than the ordinary type, and it was with the idea of eliminating frequent resetting of the slide that the Polyphase-Duplex slide rule was evolved."

"Thermit Marine Repairs" is the title of an illustrated booklet just published by the Goldschmidt Thermit Company, 90 West street, New York. "For any repairs of the kind illustrated in the following pages the Thermit process offers advantages which place it entirely in a class by itself. By using Thermit it is possible to weld heavy sections of wrought iron or steel without removing them from their position, and therefore at a very great saving in time and expenses over other methods. Sternposts of steamships are welded without removing them from the vessel, and without keeping the vessel in dry-dock more than two or three days. Rudder frames and rudder stocks are welded in the same way, and in some cases it is not even necessary to place the vessel in dry-dock in order to make the repairs. Aside from a supply of compressed air for the operation of pneumatic tools and the preheating torch, no outside power is required, and all the materials and appliances used for making the welds are light and portable and may be brought to the job. In cases where the parts to be welded can be removed without trouble or great expense, it is often economical to forward them to either our Chicago, Toronto, San Francisco or Jersey City shops, where they are welded quickly and at small expense, and shipped back to their owners within one or two days after their receipt. Our shops are thoroughly equipped with everything required for making Thermit welds in the quickest and most economical manner, and also for doing certain machine work before and after welding, where such is required."

Terry turbines for marine installations are described in Bulletin 16H2, published by the Terry Steam Turbine Company, Hartford, Conn. These turbines are used on Mississippi River graders and other dredges for driving pumps and electric lighting generators, also in the merchant marine for driving forced draft fans, boiler feed pumps, ballast pumps and generators for light and power. Over 500 are in use in the United States and other navies. The Great Northern steamship *Minnesota* has three 100-kilowatt Terry generator sets. These replaced engine sets, and were installed in three days.

Extracts from Smooth-On Instruction Book No. 12 have been published in pamphlet form by the Smooth-On Manufacturing Company, 572 Communipaw avenue, Jersey City, N. J. Here are a few extracts: "Smooth-On Iron Cements No. 1 and No. 2 are chemically prepared iron compounds made and sold in a powder form and used in mixing with water to the consistency of stiff putty. No. 1 quick hardening. No. 2 is slower hardening and hydraulic. When in this putty state they must be applied immediately, because the metalizing action of these cements is rapid, acting without heat, and in a few minutes the putty will ge too stiff to work or manipulate. These cements are unequaled for stopping leaks of steam, water, fire or oil, because they become metallic iron that has the same expansion and contraction as iron, thus keeping the joint tight at all temperatures, and joints can easily be taken apart. While metalizing these cements expand in bulk, and it is this action that makes them valuable for mechanical uses. Smooth-On Elastic Cement is an elastic iron cement prepared and sold in paste form, ready for use, in air-tight cans. Smooth-On Elastic Cement gets hard very slowly (about like red and white lead putty), but this action is quickened by heat. Smooth-On Elastic Cement may be applied to hot or cold metal. Smooth-On Elastic Cement is used for making tight joints on seams of boilers or tanks, for boiler patching and screw-thread joints. Smooth-On Elastic Cement should be applied to the inside seams of boilers and tanks when possible, because the boiler pressure will force the cement into the opening and stop the leak. For boiler patching use a compound composed of one part of Smooth-On Elastic Cement and one part of Smooth-On Iron Cement No. 1 by volume. This, when thoroughly worked, will combine to make a stiff putty, easy to work and apply. The boiler can be used as soon as the application of the Smooth-On boiler patch is completed."

The Sizzle and Drip

—one of the most annoying and disagreeable conditions where valves are used, can be immediately stopped by applying a

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These machines are built to insure ease of operation, reliability, efficiency and durability; are positive in operation and a source of economy to every user. The saving of a few valves more than pays for the machine.

The Navy Departments of the United States, Great Britain, Japan, Russia, Brazil, Argentine and Mexico have adopted Dexter Machines for their ships and naval stations and among thousands of other users are the most representative organizations in the world.

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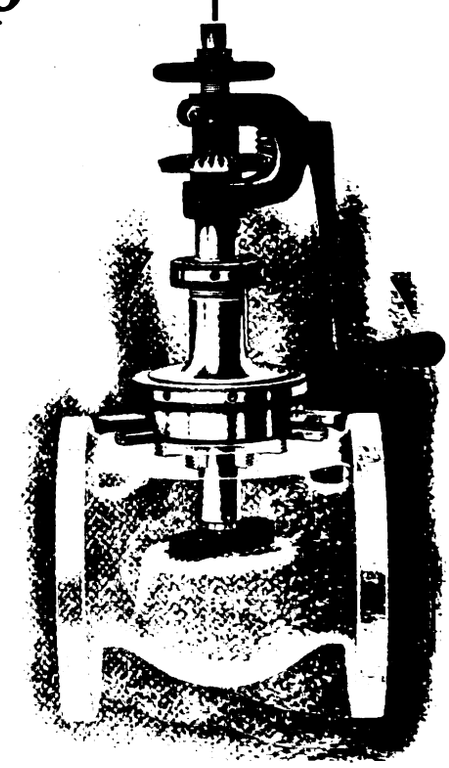

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Among the boiler shop tools described in Catalogue No. 10, just issued by the A. L. Henderer's Sons, 740 Maryland avenue, Wilmington, Del., are "Class B." roller tube expanders, which are described below. The catalogue in question describes and illustrates a large number of tools for boiler shop use, and a copy of the catalogue will be sent free to any of our readers who will write for it: "To supply the demand for an expander similar in design to 'Class A,' but of better quality, we offer the 'Class B' as the best that can be produced. Instead of the taper pins, as illustrated above, the collar is now threaded to the neck of body, which arrangement not only better secures it but also permits of adjustment to allow the body to enter the tube various distances. This, like our standard style expanders, is made with a nut on end of mandrel, but for work that requires a cap expander we make such a style, illustrated on page 3, as 'Class C.'"

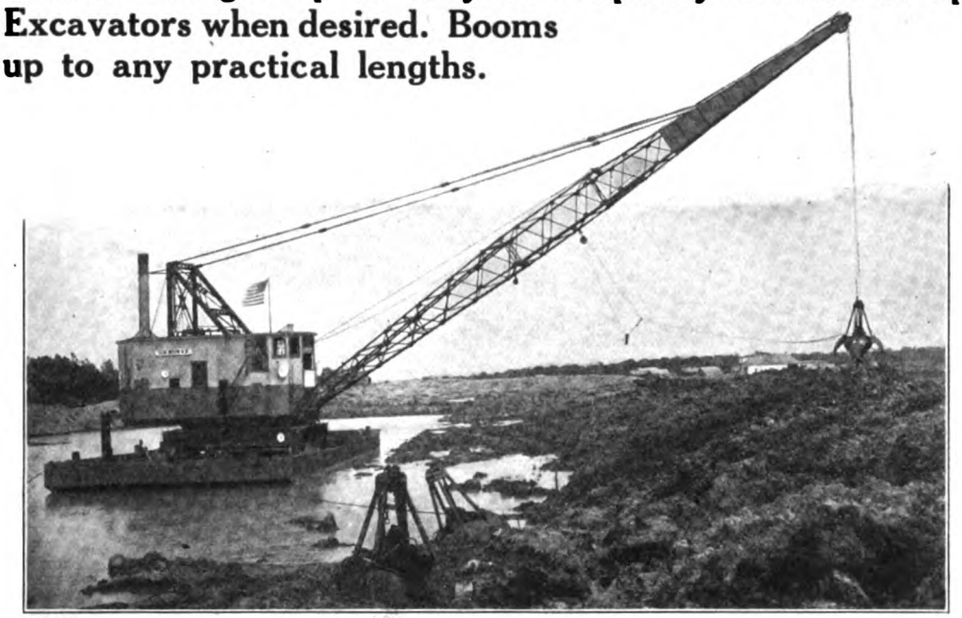
Dexter machines for reseating valves are described in Catalogue I-16, published by the Leavitt Machine Company, Orange, Mass. The United States navy and the British Admiralty have for twenty-two years used the valve reseating machine designed and manufactured by the Leavitt Machine Company. The Pittsburg Steamship Company, of Cleveland, Ohio, is using fifty-nine Dexter valve reseating machines. The Southern Pacific Company, the United Fruit Company, the Cleveland-Cliffs Company, the Providence Steamship Company, and, in fact, nearly all of the transportation companies in the United States, have adopted these machines. Japan, Russia, Brazil, Argentine, Chile and Mexico are also using Dexter machines on their ships and naval stations. The operation of the Dexter machine is a simple matter and the job is complete in a few minutes. The work of reseating a valve can be done by an ordinary mechanic without disconnecting the valve from the pipe line, and by the use of the Dexter machine valves which have been consigned to the junk heap can be put into perfect order to use again when needed. The catalogue states that the constant sizzle and drip, which is one of the most annoying and disagreeable conditions where valves are used, can be immediately stopped by applying a Dexter valve reseating machine. All of our readers interested in this subject should write for a copy of Catalogue I-16, mentioning INTERNATIONAL MARINE ENGINEERING.

A List of Products is given in Bulletin No. 19 just published by the National Tube Company, Frick building, Pittsburg, Pa. "There has been a constant and increasing demand for a complete list of products manufactured by the National Tube Company. To supply a quick and ready reference is the purpose of this bulletin. The products manufactured by this company are designed for a great variety of mechanical and commercial purposes, hence a single catalogue containing a detailed description of each separate product would be cumbersome. This bulletin contains a concise list, which gives to the trade reliable data as to the nature and number of National Tube Company products. Full information respecting any specific product will be furnished by the nearest sales office on receipt of inquiries, which should contain all details in regard to size, quantity, etc., in order to avoid superfluous correspondence and consequent delays."

A grease extracting feed-water filter for marine and stationary engines is described in a booklet published by the American Steam Gauge & Valve Manufacturing Company, 208 Camden street, Boston, Mass. "By far the greatest menace to boilers—the greatest risk of lives and property—is in the grease and oil deposits which are made under pressure of the steam exhausting from cylinders into the innumerable pin holes in tubes and plates. This substance is very soapy and much resembles graphite, and, once it is deposited, is as deceiving to the inspector as it is impervious to mechanical and chemical methods of removing it. It is in the complete removal of this fatal deposit before it can re-enter the boiler that the perfect feed-water filter finds its greatest usefulness. And one of the first essentials in accomplishing this is that the filter should have a capacity greatly in excess of the boiler demands. Our American H^2O Grease Extracting Feed-Water Filter, by its ingenious arrangement of filtering units or cartridges, affords a surface three hundred times greater than the area of the feed-water pipes, which is greatly in excess of the filtering surface obtained by any other design of filter on the market, and therefore is the most efficient and effective ever produced. It has the simplest and quickest of all methods of making renewals. It is also has a device for applying a reverse current of steam, which is extremely important for making emergency cleaning."

FOR LAND OR SEA

Bucket Dredges up to 15 yards capacity suitable to operate Drag Scraper Excavators when desired. Booms up to any practical lengths.



Traveling Locomotive Crane with 110′ boom, 3 yard Orange Peel Bucket to operate on Land or from scow, built for Mississippi Levee Board, New Orleans.

Locomotive Cranes
Unloading Machinery
Dock Equipment
Car Dumpers
Clam Shell and Orange Peel Buckets

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NEW YORK: 50 Church Street — LONDON: Caxton House, Westminster — CHICAGO: Fisher Building

I-3

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"Drill Chips" is the title of a monthly bulletin published by the Cleveland Twist Drill Company, Cleveland, Ohio. Under the title "Service is the Only True Test of Value," the following statement is made in the April number of *Drill Chips*. Any of our readers who write to the Cleveland Twist Drill Company, and mention THE BOILER MAKER, will be put on the free mailing list to receive this publication monthly. "We've all heard the old arguments pro and con, but mostly con, on the subject of price. But when a fellow can't talk quality or service in behalf of his product he talks price. Naturally, for he must talk something. The fact of the matter is, though, that the price can't be right unless the quality is there. Price means nothing, but quality is the guarantee of service, and therein lies the truth about real economy. It makes no difference whether you're buying shoes, automobiles or shingles. Service is the acid test. But speaking of drills—as we will, occasionally—are you buying on price, quality, alleged quality or—perish the thought—can it be that you just don't know why you are buying those particular drills that you use every day? Well, anyhow, and here we get down to cases, there's a way for you to find out what your drilling costs are. Not the cost of your drills. That doesn't matter. But the cost of your drill service, which decidedly does matter. In other words, the cost of holes, not the cost of drills—for when you buy drills you buy holes. Don't let that fact escape you and meanwhile consider the following suggestion: Let the cost of your drilled holes be represented by a fraction. The numerator of this fraction is the work done by the drill in a unit of time. By work we mean the number of inches or holes drilled under proper fixed conditions. The denominator of the fraction is the price of the drill. It will be readily seen that the drill represented by the largest fraction is the one that will do your work most economically. Example: A White drill costs $1 and drills 30 inches in 5 minutes; fraction 30-100 = 3-10 (or .300 worth of work). A Black drill costs 90 cents and drills 20 inches in 5 minutes; fraction 20-90 = 2-9 (or .222 worth of work). White drill is represented by largest fraction; therefore, regardless of its cost price, it is the most economical drill, because the holes it drills are the cheapest."

The Allen condensed air ice machine is described by H. B. Roelker, 41 Maiden Lane, New York, in a catalogue which he has just issued. These machines are in use on a great many private steam yachts, and more than 250 are stated to be in active service on United States and foreign battleships and on merchant steamers for the tropics. This ice machine contains no chemicals.

The marine oil engines made by A. Mietz, 130 Mott street, New York, are described in a catalogue just published. "The Mietz & Weiss oil engines have been on the market so long, and the general public have become so familiar with their merits, as is demonstrated by the large number now in use (over 100,000 horsepower), that in presenting this catalogue describing our marine type, we are convinced that they embody all the essential features of simplicity, reliability, economy and absolute safety—features that are indispensable to the successful adaptation of engines for marine power purposes."

The Reilly multi-screen feed-water heater and grease extractor is described in Bulletin 605, published by the Griscom-Russell Company, 2124 West Street building, New York. "This device guarantees clear water for your boilers. Its filtering surface is 500 times the cross-sectional area of the feed pipe—and the efficiency of the filter depends upon the extent of the filtering area. All filters have to be cleaned. The Reilly multi-screen has a surface blow for clearing oily scum, and when necessary the filtering cartridges can be removed through a convenient handhole without disturbing the pipe connections. A by-pass guards against interruption to the boiler feed."

Rickards orange peel buckets are described in a circular published by the Industrial Supply & Equipment Company, 407 Sansom street, Philadelphia, Pa. "Rickards orange peel buckets are constructed with four curved triangular cast steel blades, and when closed form a tight semi-spherical bowl, which holds the excavated material. Rickards bucket parts are interchangeable and are numbered and lettered, reference to the number of the bucket being all that is necessary in ordering any part. The center block is made of cast steel, and fitted to carry and allow the bucket to hang central at all times. All buckets are fitted with chain wheels, as this construction has been found more desirable. Buckets to be operated by wire rope will be furnished if so ordered."

Be Independent of the Ice Man—

Don't be subjected to the annoyance and delay of putting into port for ice—and the risk of running short during the cruise.

Make yourself independent of the ice man by installing the

JM SYSTEM OF REFRIGERATION

using the

Audiffren-Singrun Machine

This machine connects direct with ice box or cold storage room—or both. Produces a lower and drier temperature than ice, thereby preserving food better and longer and preventing the breeding of disease germs. When used as an ice-making machine it has a capacity of 11 to 110 lbs. an hour, according to size of machine.

The Audiffren-Singrun Machine operates by electricity, steam or gasoline. No ammonia or dangerous gases are used. And it never has to be re-charged.

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H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos Packings; Pipe Coverings; High Temperature Cements; Boiler Preservative; Conduit; Metallic Hose; Fuses; Boiler Plugs; Stack Lining; Tube Cleaners, etc.

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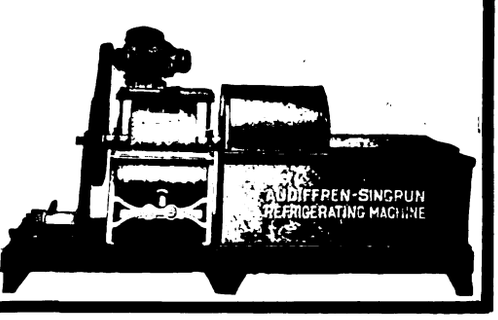

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The Brunswick Refrigerating Company has just issued a new list of marine users, which may be had upon request, at the company's main office, No. 132 Jersey avenue, New Brunswick, N. J. This new list contains the names of 182 vessels equipped with a total of 218 plants; some of the boats having two, some three, and some four plants. Catalogues on marine refrigeration will be gladly sent upon request.

Evaporating and distilling apparatus is described in Bulletin 10-D. E., just published by Schutte & Körting Company, Twelfth and Thompson streets, Philadelphia, Pa. "This bulletin illustrates and describes the type of evaporating and distilling apparatus which we manufacture. These evaporators and distillers have been thoroughly tested out and have proved themselves to be of the most efficient order, 1 pound of water being evaporated with 1 pound of steam. We have supplied quite a number of these plants, amongst them being two United States navy tugs and one United States battleship. At present we have on order plants for four United States torpedo boat destroyers, one United States battleship—the *Pennsylvania*—and also the United States destroyer tender *Melville*. If you are interested in this matter we would be pleased to give you further information."

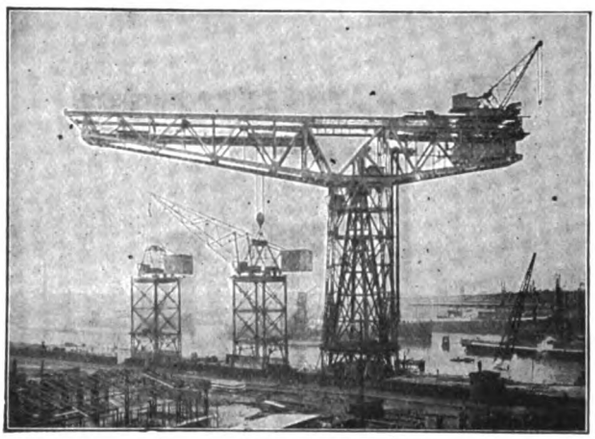
"Vismera" pure iron sheets and plates are described by the Inland Steel Company, First National Bank building, Chicago, Ill., in a booklet just published. The company places special stress on the statement that these plates are rust-resisting and corrosion-defying. "Our latest Vismera development is described above as Vismera pure iron. The present demand is for a high iron purity, and we set about to produce it with an astonishing result, in that we have attained a higher pure iron content than has heretofore been obtained commercially and without sacrificing the tensile strength to any extent. Our investigations convinced us that the principal weakness of the very-much advertised rust and corrosion-resisting sheets and plates in the market to-day was its very low tensile strength, the reason for which being the use of an excessive amount of common or commercial scrap in its manufacture. We found that this could be overcome through the use of new pig iron and our own mill crop ends. Strong Northern ore is smelted in our own blast furnaces, and produces a grade of pig iron especially adapted to the manufacture of Vismera pure iron."

A full line of high-grade engineering specialties is described in Catalogue No. 50 published by the Lunkenheimer Company, Cincinnati, Ohio. This comprises valves of all kinds, water columns, gages and other boiler mountings, whistles and ground key work of all descriptions; injectors, lubricators and lubricating devices, oil pumps, oil and grease cups, gas engine specialties, etc.

De Laval Class "C" turbnes, made by the De Laval Steam Turbine Company, Trenton, N. J., are described in Catalogue C-46, just published by the manufacturer. This turbine is stated to be exceptionally simple in construction, and to have an unusually high efficiency, making it especially valuable for driving centrifugal pumps, blowers, generators, etc.

An extra heavy iron body stationary "Y" blow-off valve, designed for 250 pounds pressure, has just been put on the market by the William Powell Company, Cincinnati, Ohio, and is described in circulars the company has recently had printed. "This improved straightway 'Y' type of blow-off valve with enlarged body offers a free passage to the contents of the boiler, and for this reason is preferred by many engineers. Body and yoke are cast of a select grade of iron of high tensile strength. They are made in accordance with the revised State law, without bolt slots in either bonnet or body. Stem *T* is cast of steam bronze composition, and has an acme thread on stem admitted the best for wear. The disk *E* is cast of white 'Powellium' bronze, a metal that will resist corrosion. It has two wearing faces and is regrindable, reversible and renewable. The disk-holder *D* is cast of steam bronze composition. This holder fitting snugly in the body, is given a centrifugal motion by the steam striking the spiral grooves cast around the sides when opening and closing the valve. It is the best self-cleaning boiler valve on the market to-day. The seat *F* is cast of white 'Powellium' bronze, and is regrindable, reversible and renewable. The expansion and contraction of this metal coincide with that of the iron casting, insuring a tight joint between the seat and body at all times. All the parts are made to gage and are interchangeable. Every valve is tested and passes through a careful inspection before shipment. They are guaranteed to stand the service to which they are subjected."

DEMAG



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Lifting Cap. 550,000 lbs., 340 Feet High, 240 Feet Radius

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ARE MODELS FOR DESIGN
WORKMANSHIP and EFFICIENCY
SINCE 1879 WE HAVE DELIVERED
84 CRANES WITH A TOTAL
LIFTING CAPACITY OF 9500 TONS
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"Bronze Alloys and Babbitts" is the title of a neat pamphlet just published by the Lumen Bearing Company, Buffalo, N. Y. "The bronze, brass and aluminum alloys described in this booklet are standard for various requirements, and are offered with our specific recommendation. The babbitt metals have been adopted after comparison with and tabulation of various results recorded by recognized authorities and our own engineers. All alloys and babbitts are held to specifications by our metallurgist, through the daily use of our chemical and physical testing laboratories."

TRADE PUBLICATIONS

GREAT BRITAIN

J. W. Brooke & Company, Ltd., Adrian Works, Lowestoft, England, have just issued a 46-page catalogue describing their marine motors.

"A Small Electric Fan that Ventilates" is the title of a pamphlet published by the American Blower Company, Detroit, Mich. The outfit described is said to be especially serviceable for use in staterooms and on board ship. The Ventura fan is the very latest development in disc fan design and construction. Ten broad blades, with the proper curve, propel large volumes so efficiently that the electric current consumption is really insignificant. Made in eleven sizes; wheels, 11 to 48 inches diameter."

Steam Dredges are described in Catalogue No. 33, published by W. H. Allen, Son & Company, Ltd., Queens Engineering Works, Bedford, England. "The turbine is of the impulse type. The expansion is effected in one or two stages where the steam passes through a set of nozzles and expands thereby down to its final pressure. The steam issues from the nozzles as a free jet, and passes through the blades of the rotor in a radial direction with a high velocity, depending upon the difference in pressure between the entry into and exit from the nozzles. The whole of the potential energy of the steam is changed into kinetic or velocity energy before impinging against the blades of the rotor."

"A Perfect Power Meter" is the title of a catalogue published by the Lunken Company, Ltd., 35 Great Dover street, London, S. E. "Up to the present, when the engineer wishes to ascertain the average power an engine is giving during a certain period, the only means he had is to take successive diagrams with the ordinary indicator, measure each one for mean pressure, and make his calculation from this. But seldom is the duty of an engine so regular that from the comparative few diagrams taken the average power can be computed with any degree of accuracy. On the contrary, in most power plants the fluctuations are so rapid, and the number of diagrams that can be taken are so insignificant compared with the number of piston strokes, that the data supplied by this method can by no means be relied on. On the other hand, to properly measure a great number of diagrams is a very tedious work. The apparatus, of which a description follows, automatically indicates and measures the power of an engine, and does so in a more accurate and reliable manner than by any other means. Two different patterns are made. One is intended as a permanent fixture to the engine, giving the engineer an exact daily record of the energy expended. This record can then be compared with the useful work performed, and with the amount of steam, coal, oil or gas consumed. The other pattern is intended as a testing indicator. By its means ordinary diagrams can be taken in addition to the automatic integrating part. Either apparatus can equally be used for measuring the power absorbed by air compressors, pumps, etc."

BUSINESS NOTES

AMERICA

THE STANDARD OIL COMPANY'S new steamship, the *J. H. Moffett*, now building, will be provided with an Alberger condensing equipment for the main engines, made by the Alberger Pump & Condenser Company, 140 Cedar street, New York. This equipment will consist of a Spiraflo surface condenser, a turbine-driven Hydroflo dry air pump, and a turbine-driven centrifugal circulating and condensation pump. The manufacturer of this outfit states that Alberger Spiraflo surface condensers embody the first radical improvements in condenser design since the days of Watt, and that their light weight, combined with unusually high efficiency, makes them the ideal apparatus for marine service.

BEARING TALKS No. 1

Do not require oil or grease

SAFETY FIRST

Many Marine accidents and some disasters have been traceable to Bushings that needed oil. Eliminate any possibility of trouble in YOUR case. Use BOUND BROOK Bushings—self lubricating and give 100% Efficiency and Satisfaction. Be fair to yourself and us—try them. Specify BOUND BROOK.

Graphite Lubricating Co.

SPECIALISTS IN OILLESS BEARINGS

Church and John Sts., Bound Brook, N. J.

QUINCY A. SHAW, Prest A. J. GARCEAU, Treas.
A. H. FOLGER, Mgr. R. C. MONTEAGLE, Ass't Mgr & Engineer

THE LOCKWOOD MANUFACTURING CO.

Established 1880

IRON WORKS EAST BOSTON, MASS.

The R. C. Monteagle Patent Piston and Piston Valve Packing

for Reciprocating Engines of *any make*—Marine, Stationary, Steam, Gas, Water, or Ammonia, Vertical or Horizontal

Will Reduce Fuel Bill to a Minimum

Bottle Tight
Practically No Friction
Practically No Wear

LESS FUEL INCREASED LESS LABOR EFFICIENCY

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THE TEBO YACHT BASIN COMPANY, foot of Twenty-third street, Brooklyn, N. Y., is sending out circulars stating that the company has the largest, safest and most accessible basin for the storage of yachts of all kinds, and that wharfage, drydocks, coal, gasoline and water service are supplied at economical rates. Specialists in construction and repairs are located on or adjacent to the basin.

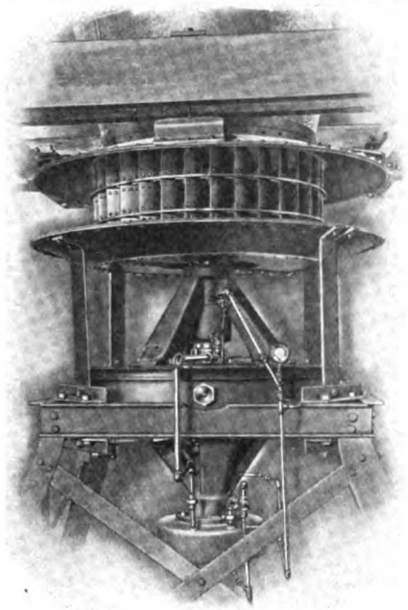
THE MORRIS MACHINE WORKS, Baldwinsville, N. Y., writes INTERNATIONAL MARINE ENGINEERING that it is continuously building hydraulic dredges with engines directly connected, and that it has furnished a large number of such equipments for suction dredges. Among the largest of these are two 1,000-horsepower triple-expansion engines for a suction dredge for the United States Engineer Office, Portland, Ore.; one 20-inch dredge pump, directly connected to a 1,000-horsepower triple-expansion engine, for the Chicago, Burlington & Quincy Railroad Company; one 20-inch dredge pump, directly connected to a 1,000-horsepower triple-expansion engine, for the Home Dredging Company, Mobile, Ala.; one 20-inch dredge pump, directly connected to a 750-horsepower triple-expansion engine, for J. W. Thompson, St. Louis, Mo.; a complete 15-inch hydraulic dredge for use in the New York Barge Canal.

OFFICIAL APPROVAL of the Lundin housed lifeboats and the Lundin power lifeboat has been received by the builders, the Welin Marine Equipment Company, Long Island City, N. Y., from the United States Steamboat Inspection Service. This approval is based on the tests conducted at the company's dock in the East River March 13, and out at sea on the following day. Sixty-seven men—fifty inside and seventeen more standing on one side, outside—tested the flotation and stability of the 30-foot by 10-foot power boat, and sixty-one men were lowered from a pair of Welin davits mounted on the dock into the water in a 28-foot Lundin decked lifeboat. Eight members of the Steamboat Inspection Service, besides Supervising Inspector-General George Uhler, witnessed the test, and on the following day watched the boats maneuver out at sea from an ocean tug. So satisfactory were all these tests that the official approval has been given for their use on steamships.

THE RECENT NAUTICAL SHOW in Philadelphia, which was held in the store of John E. Hand & Sons Company, manufacturers of nautical instruments, 222 Walnut street, Philadelphia, proved so successful that after the closing of the show the firms exhibiting formed themselves into a trade association, with the idea of giving a much larger show next fall. The association will at once make plans for the next exhibition, and will secure a greater amount of business, besides taking agencies for out-of-town nautical articles. The John E. Hand & Sons Company were given a vote of thanks from the exhibitors, and all interested in the subject should write to the firm for further particulars.

A NEW FORM of Lackawanna steel sheet piling section, made by the Lackawanna Steel Company, Buffalo, N. Y., is now being rolled for use in 90-degree corners of rectangular cofferdams or retaining walls, either with the hook or guard on the outside. Heretofore corner members have been fabricated. "Rolled corners overcome the necessity of using specially fabricated and less-easily driven corners; also, they weigh less per lineal foot than the fabricated corners, and can be used wherever the conditions of load are not excessive. With the flexibility characteristic of the Lackawanna type of joint the two new corners will meet most requirements, but where a variation from 90 degrees is desired the manufacturers will roll the special angle for a reasonable additional charge."

ANNUAL MEETING OF THE JOSEPH DIXON CRUCIBLE COMPANY.—At the annual meeting of the stockholders of the Joseph Dixon Crucible Company, held at the company's main office in Jersey City, N. J., on Monday, April 20, 1914, the retiring board of directors, consisting of George T. Smith, William Murray, George E. Long, Edward L. Young, William G. Bumstead, J. H. Schermerhorn and Harry Dailey, were unanimously re-elected. The meeting was attended by a large number of stockholders, who expressed satisfaction with the present management and recorded the largest vote ever represented at an annual election, 9,628 out of a possible 10,000 shares being represented. The officers of the company, consisting of George T. Smith, president; George E. Long, vice-president; J. H. Schermerhorn, treasurer; Harry Daily, secretary, and Albert Norris, assistant treasurer and assistant secretary, were also re-elected.



Capacity, 25,000 c.f.m., 5" Static Pressure. 1650 R.P.M.

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VERTICAL TURBO FORCED-DRAFT FANS

For Marine Use

This illustration is one of sixteen sets which we have recently built on one order for the United States Torpedo Boat Destroyers, **SMITH, LAMSON, WORDEN** and **MACDONOUGH.**

These fans maintain a 5-inch static pressure in a closed fire room and furnish draft for oil burning. They are self-contained, united with two extra large bearings, and of most rigid construction to take care of strain from excessive pitching and rolling.

Note the solid bucket, one-piece turbine roter. The process of building same is our patent and makes the most durable turbine in the world.

Get in touch with us on all marine forced-draft work. You cannot go wrong on our engineering or apparatus on this work.

Write Our Marine Department

B. F. STURTEVANT CO.
HYDE PARK, BOSTON, MASS.
Offices in All Principal Cities

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THE FUMIGATING & FIRE EXTINGUISHING COMPANY OF AMERICA has removed its head office from 29 Broadway to 90 West street, New York.

THE NEWPORT NEWS SHIPBUILDING & DRY DOCK COMPANY announces the removal on April 25 of the offices of the president and purchasing agent of the company from 30 Church street to the Wentworth building, 233 Broadway, New York.

THE RESULTS following the installation of the Eckliff purifier and circular in the boiler of the tug *McCarthy* caused the Great Lakes Dredge & Dock Company, Cleveland, Ohio, to place orders with the Eckliff Automatic Boiler Circulator Company, 46 Shelby street, Detroit, Mich., for seventeen more installations. Before the *McCarthy* was equipped with the Eckliff purifier and circulator its boiler accumulated so much mud in the bottom that it was necessary to lay off one day in seven to wash it out. Also, the furnace and tubes were covered with scale. The first thirty days showed a fuel saving of 9 percent. At the end of that time it was necessary to open the boiler and remove the hard scale which had been loosened by the action of the circulator. The boiler was then operated continuously for six weeks and again cleaned of the hard scale which had begun to interfere with the automatic removal of the sofe residue in the bottom of the shell. A thorough examination at that time showed the tubes and furnaces almost free of all scale formation. This result was accomplished by the action of the Eckloff circulator, absolutely without mechanical or chemical aids of any kind.

MARINE REFRIGERATING PLANTS.—Since last reported, the Brunswick Refrigerating Company, New Brunswick, N. J., has sold to the United States Government for the dredge *Barnard* a 2-ton refrigerating plant. This plant is to be erected by the Charleston, S. C., navy yard. The Quebec Steamship Company placed an order for a 4-ton refrigerating plant for their steamship *Guiana*. The Ward Line has placed an order, the fifth consecutive, for a 4-ton refrigerating and ice-making plant for the steamship *Camaguey*. The Mallory Steamship Company has placed an order for a 2-ton refrigerating plant for each of their steamers *Neches* and *Medina*, now building at the Newport News Shipbuilding & Dry Dock Company, Newport News, Va. In this connection it is interesting to note that the Brunswick Refrigerating Company has now installed plants on steamers of all four lines comprising the Agwi Lines. The New York & Cuba Mail Steamship Company, better known as the Ward Line, has plants on the steamships *Antilla, Yumuri, Manzanillo, Santiago* and *Camaguey*. The New York & Porto Rico Steamship Company has plants on the steamers *Lorenzo* and *Brazos*. The Mallory Line, as noted above, on the steamers *Neches* and *Medina*, and the Clyde Line on the steamship *Lenape*. Marine refrigeration is becoming an item of interest to everyone in marine circles, and the Brunswick Refrigerating Company will be pleased to send literature on the subject to all of those interest.

THE ANNOUNCEMENT IS MADE that the United States Steel Corporation, with its subsidiary companies, proposes to have a comprehensive exhibit of its operations at the Panama-Pacific Exposition in San Francisco in the year 1915. It will begin with the ore fields, and carry on an educative picture of its operations in ore mining, rail and water transportation, dock operations, coal, coke and pig iron production, steel manufacturing in its various lines, and will also present in a materially displayed way the processes of manufacturing of many of its subsidiary companies' products, including "National" pipe; also how it utilizes its by-products and the display of many uses in which its general products are employed, typifying the advancement in the uses of this country's resources. In addition to the material exhibits before mentioned, the Corporation intends to exhibit in a comprehensive manner, by moving pictures, its operations throughout all departments, showing the ramifications of the processes of the Corporation's operations. It is proposed as well, to set forth to the world the work which the United States Steel Corporation has done towards the social welfare of its employees and those depending upon them. Also, it will exhibit many forms of safety devices that have been conceived by the Corporation officials and its employees, and in the installation of which large sums have been, and are being, expended by the Corporation. In this social welfare department will also be shown the methods employed by the Corporation in the aid and care for the injured and the welfare of employees' conditions at work, and the benefits that are aimed to be afforded to employees at their work and in their surroundings. Also the voice that is given to the employees through their committees in bringing about these improved working conditions and the general plans of the Corporation's methods.

COX & STEVENS

15 WILLIAM STREET, NEW YORK

VESSEL BROKERS, NAVAL ARCHITECTS AND MARINE ENGINEERS

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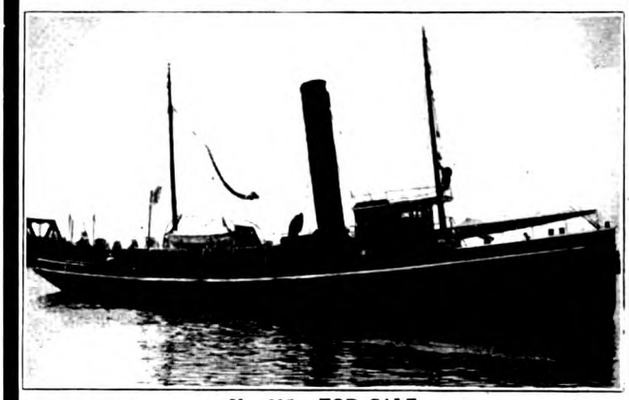
Passenger Propeller, 90'x22'x7' draft Compound Engine. A bargain.



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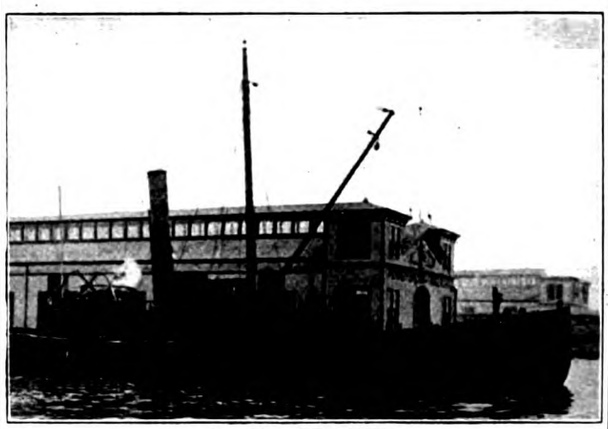
Sea going Steel Tug, 136' x 26' x 15', Triple Engine, Scotch Boiler. Excellent condition.



No. 957. FOR SALE

Steam Lighter, nearly new, 120' x 29' x 11', draft. 9'-6", Compound Engine. Excellent condition.

The above illustrate a few desirable vessels for sale. We have a large list of all sizes and types. No charge for information. Write and tell us what you want. COX & STEVENS, 15 William St., New York.

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Advertisements will be inserted under this heading at the rate of 4 cents (2 pence) per word for the first insertion. For each subsequent consecutive insertion the charge will be 1 cent (½ penny) per word. But no advertisement will be inserted for less than 75 cents (3 shillings). Replies can be sent to our care if desired, and they will be forwarded without additional charge.

Superintendent wanted for a small ship repair yard. State qualifications, experience and references. Address *Shiprepairs,* care of INTERNATIONAL MARINE ENGINEERING, 17 Battery Place, New York.

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BIG CONTRACT FOR COLD STORAGE INSULATION.—The Seattle, Wash., branch of the H. W. Johns-Manville Company was recently awarded a contract for supplying cork sheets for the Mainland Ice & Cold Storage Company's new plant at Vancouver, B. C. This product, which is known as J-M Pure Cork Sheets, is said to be the standard material for cold storage insulation. It is said that these sheets possess higher insulating efficiency than any other material on the market, as they contain the greatest number of "dead air" cells. The process of making these sheets is a most interesting one, and consists, in part, of compressing pieces of cork in molds at a temperature of 500 degrees F. At this temperature the natural gum of the cork is liberated, forming a solid block which will not crumble, rot nor absorb moisture. For further particulars regarding this product we suggest that our readers write to the H. W. Johns-Manville Company, Madison avenue and Forty-first street, New York.

The Most Dreaded of Sea Perils is Fire

Early discovery of fire removes the peril

The AERO AUTOMATIC System gives immediate notice of fire

Practical service proves "AERO" to be the most adaptable, efficient and reliable system in use.

A fine copper tube is threaded throughout the ship including all cabins and compartments.

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A sensitive diaphragm at one end in the switchboard cabinet swells out closing an electric circuit, thus operating all the signals which can be placed in as many places as desired.

One watchman with "AERO" installed, is equal to ten where there is no "AERO."

Fire Underwriters, Steamboat Inspectors, Marine Architects and Builders endorse the System

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THE PANELING OF THE PASSAGEWAYS, STATEROOMS, bulkheads, door paneling, etc., for the two passenger and freight steamships which are building at the yard of William Cramp & Sons Ship & Engine Building Company, Philadelphia, Pa., for the Great Northern Steamship Company, Portland, Ore., will be furnished by the Keyes Products Company, 71 West Twenty-third street, New York. The latter company is also furnishing its paneling material, which is called Nevasplit, to James Rees & Sons Company, Pittsburg, Pa., for a fireproof excursion steamer to run on the Ohio River.

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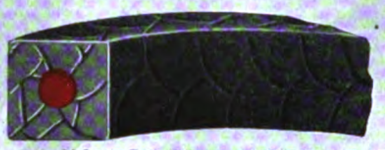

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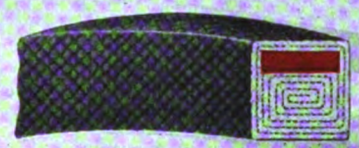

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SPIRAL AND COIL PACKINGS OF PEERLESS MANUFACTURE HAVE AS A CORE OR CUSHION BACK THE SAME RUBBER COMPOUND AS THAT OF

RAINBOW SHEET PACKING

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TRADE PUBLICATIONS.

AMERICA

"They are Worth a Thousand Dollars a Boiler, and I Will Pay for Them." This is the title of an illustrated circular just issued by the Eckliff Automatic Boiler Circulator Company, 46 Shelby street, Detroit, Mich., and is a quotation from a well-known superintending engineer who recently made this statement of Eckliff circulators. Mr. Albert Taylor, chief engineer of the steamship *Suffolk,* writes to the manufacturer of the Eckliff circulars as follows: "I freely state that the Eckliff circulators, as installed in the boilers of steamship *Suffolk,* were a surprise to me. They create and maintain perfect circulation. The circulation starts as soon as the fires are burning, and I raised a steam pressure of 150 pounds on an 18-foot diameter Scotch boiler from water at 90 F. in 46 minutes without any sign of leak or strain. The thermometer at the very bottom of boiler corresponds within one degree to the temperature of steam as indicated by gage. I save coal and time, get drier steam and have no leaks."

Wagon and truck loaders are described in a 32-page illustrated catalogue issued by the Link-Belt Company, Chicago, Ill. The manufacturer states that this machine will load coal, coke, coal, gravel, stone, sand and similar materials from ground storage at the rate of 60 tons an hour, and that it will load a 5-ton auto-truck in less than five minutes. "The past four years have demonstrated the success of Link-Belt portable wagon and truck loaders for loading loose materials from ground storage, and have proved their superiority over hand-shovelers from every standpoint of efficiency and economy. Link-Belt loaders have become so popular that today they are in successful daily use from coast to coast. These machines not only handle anthracite and bituminous coal, of which each year there is a greater amount carried on ground storage, but they are winning constantly increasing recognition for loading sand, stone, gravel and similar loose materials, as well as coke at gas plants, clinkers at cement mills, and foundry refuse at manufacturing plants. Wherever quantities of loose materials must be loaded into wagons or trucks with promptness and dispatch and at a low cost per ton, the Link-Belt portable wagon loader should prove to be a profitable investment. In this book we give illustrations, specifications and net prices of our standard wagon loaders, and show some of the special machines which we have built to meet individual requirements."

Linoleum cements and glues, which are stated to be especially useful for marine use, are described in a booklet just issued by L. W. Ferdinand & Company, 201 South street, Boston, Mass.

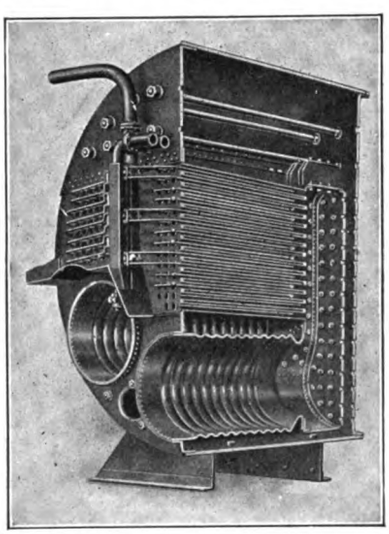
The flame arc lamps, Type W, made by the General Electric Company, Schenectady, N. Y., are described in a circular the company has just issued. One of these circulars shows the night view in a steamship pier in New York City, and concerning it the following statement is made: "The employees of the company are obliged to work nights unloading; they are very high in praise of Type W flame arc lamps. The illumination has been increased to such an extent that the markings on the freight are clear and easily read, thereby reducing labor to a minimum and practically eliminating errors." Good light also is a great preventive of accidents. The Type W flame arc lamp is one of the most powerful lighting units known; its ease of installation, long period between trims, low cost of maintenance and thorough reliability make this lamp one of the most economical to install. "Type W flame arc lamps are the most efficient and satisfactory method of illuminating docks, piers, sheds, warehouses, etc."

Expansion joints are described in Bulletin No. 19 just published by the Alberger Pump & Condenser Company, 140 Cedar street, New York. "The Wainwright improved expansion joint is normally designed for a maximum working pressure of 160 pounds per square inch, and is capable of absorbing a lineal expansion from 1½ to 2 inches, according to size. This joint consists of a soft corrugated copper expansion cylinder, much heavier than that used in the low-pressure type, and a smooth, hard brass cylinder fitted within the corrugated cylinder, which limits the amount of travel. Inside and outside reinforcing rings of cast iron divide the travel equally between the corrugations. Where properly installed, and in piping where the steam is at a constant pressure, this fitting has been most satisfactory. However, where this joint is required to absorb alternate expansions and contractions occurring frequently, the soft copper cylinder hardens of crystallizes and trouble may result. As the service for which this joint is suitable is limited, we offer a steel expansion joint described below to meet all conditions. Prices and dimensions of the Wainwright improved expansion joint are not tabulated in this catalogue but they may be obtained upon application."

SCHMIDT FIRE TUBE SUPERHEATER
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

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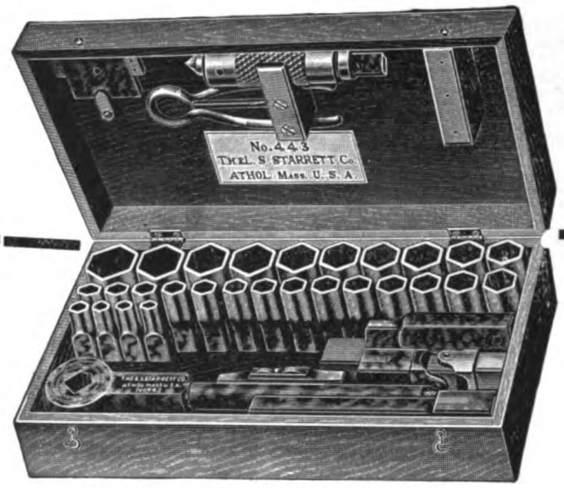
A system for extinguishing fire on board ship is described in Catalogue 11-F published by the Schutte & Körting Company, Twelfth and Thompson streets, Philadelphia, Pa. This system replaces the oxygen in the atmosphere by inert gases, such as carbon dioxide. "Not only has it been amply demonstrated that these gases will instantly extinguish the worst kind of fire, but they are passed into the compartments in such a cooled condition as to rapidly eliminate the heat of the fire, thereby preventing a recurrence." The Schutte & Körting Company states that all vessels entering the port of Philadelphia are being disinfected by this means, which has been approved by the United States Steamboat Inspectors for fire extinguishing, and by the United States Public Health and Marine Hospital Service for disinfecting and fumigating.

An ideal rope for dredge work, according to the manufacturer, the Waterbury Company, 80 South street, New York, is "Waterbury" armored rope, described in a circular the company has just issued. "The constant exposure to the action of the elements and working conditions which subject a rope to severe abrasive wear make dredge service an exacting test of rope quality. In work of this kind experience demonstrates that Waterbury armored rope (Gore patent) outwears any ordinary wire rope. One dredge owner writes that Waterbury armored rope 'performed more work than any two, and sometimes three, of the best ropes previously used.' Waterbury armored rope embodies the only important improvement in the construction of wire rope in many years. Waterbury armored rope has each strand served with flat steel wire having convex edges. This steel armor protects the crown of the strands from abrasion and the wires from chafing at the point where the strands converge during flexing movement. It also assists the strands to retain the grease necessary for internal lubrication."

"Marine Steam" is the title of the second edition of a handsomely printed and illustrated cloth-bound book of 220 pages, published by the Babcock & Wilcox Company, 85 Liberty street, New York. One of these books ought to be in the hands of every ship owner, designing engineer, naval architect and marine engineer. The introduction to the volume is as follows: "In engineering, at the present day, there are three vital factors to excellence—strength, efficiency, economy; and the owner of the machine or structure who has learned that the engineer is the man who can make a dollar go farthest is just as much interested in these factors as the engineer. As has been well said, 'the ultimate aim of nearly all engineering work is to make a profit for the user, and, however admirable otherwise, if it fails in this respect it is an engineering failure just as much as a break-down.' The object of this catalogue is to show to vessel owners, designing engineers and naval architects, as well as all who have the installation and care of machinery, that the Babcock & Wilcox marine boiler fulfills perfectly the three requirements mentioned above as well as the many others demanded of the best boiler; and that its use will give the most complete satisfaction to the designer of hull and machinery, the user and supervisor, and finally the owner by a greater return for his investment. In early editions of this catalogue it was necessary to present the merits of the watertube boiler as an argument, because not many were in use and the installation was recent. Now this is all changed. During the past fifteen years nearly three million horsepower of Babcock & Wilcox boilers have been installed in naval and merchant steamers all over the world, so that there has been the most ample opportunity to test them out in every way and under all conditions. They are used not only in the dreadnoughts and fast cruisers of the navies and in fast mail steamers, but in cargo vessels, ferryboats, fireboats and steam whalers. Their economy and efficiency are so high that they have set the mark which no other boiler has yet attained. In some cases there has been opportunity for direct comparison with Scotch boilers in regular service where the boilers are in identical hulls with the same engines. In these cases the average of many voyages over the same route has shown that the Babcock & Wilcox boilers are decidedly more economical in fuel, saving more than 10 percent. The features of safety and minimum weight for very high pressures commended them for naval use more quickly than in the merchant marine; but the demand for great power to give high speeds has made the designers of the latter class realize that they cannot afford to be carrying around hundreds of tons uselessly in the old type of shell boilers which might be used to earn money by carrying cargo. The Babcock & Wilcox boiler is safer, lighter, easier to maintain, much more nearly immune from damage by carelessness, and is also more efficient than the shell boiler. When vessel owners realize these facts fully, they will be amazed that they continued to use the old type of heavy and less efficient boiler so long. In the following pages will be found complete data proving all these statements and showing the saving by the use of the Babcock & Wilcox boiler."



You're never cornered with a

Starrett Patent Ratchet Wrench

On board ship where machinery is cramped and in dark places you will find this tool a wonder. It will turn out any standard nut or bolt in all sorts of difficult places—places where the ordinary monkey wrench is useless. The ratchet permits rapid action with only a short arc swing. The extension reaches into otherwise inaccessible places.

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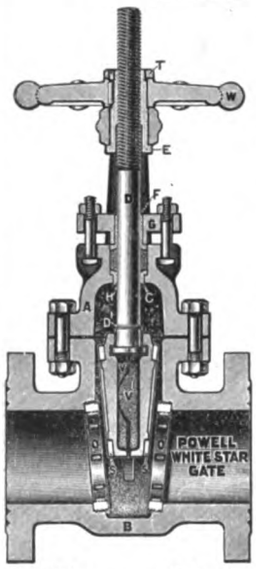
(Especially The "White Star" Valve)



Five Points of Efficiency Combined in the Powell Iron Body White Star Gate Valves

1. Body and yoke cast of a select grade iron of high tensile strength.
2. The bronze screw stem revolves in a bronze bushing and can be repacked under pressure.
3. Disc faces and seat rings are of Non-Corrosive White Powellium Bronze applicable to most temperatures of superheated steam.
4. All working parts made to gauge and are interchangeable.
5. Don't forget Powell Gate Valves take pressure either way.

Ask your dealer for POWELL VALVES or write us.

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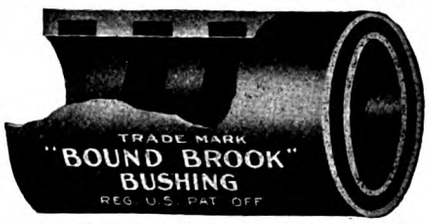

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For Over Quarter of a Century

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We want you to believe it. Try "BOUND BROOK" Bushings—and you will.

Graphite Lubricating Company

SPECIALISTS IN OILLESS BEARINGS

Church and John Sts. Bound Brook, N. J.

The McNab & Harlin Manufacturing Company, 55 John street, New York, has just issued a booklet presenting to the trade its line of iron, brass, anti-acid meal and lead cocks.

"Submarine Intership Communcation" is the title of a bulletin just issued by the Submarine Signal Company, Boston, Mass. This bulletin is especially timely in view of the recent disasters at sea. "Until recently the use of submarine signals has been confined to coast warnings. The bells tell the ships of the danger, and the ships by the use of the receiving apparatus find out where the danger is. The use of a bell on a moving ship, however, was found not to be sufficiently effective to be practical. For obvious reasons it cannot be hung overboard, and if placed inside the ship its sound is so muffled that it cannot be heard far enough for safe navigating. In our circular letter of May 19 we called attention to the use of the hand-rung emergency bells, after an accident. We now call attention to the latest development in submarine signaling which prevents the cause. The way the *Storstadt* cut through the *Empress of Ireland* shows that to build an unsinkable ship is impossible. She would have cut through double bottoms as easily as she did through bulkheads and decks, and she was moving slowly. The only means of having unsinkable ships is to prevent their running into each other. At a recent meeting of the American Academy of Arts and Sciences, Prof. R. A. Fessenden demonstrated a new apparatus for producing sound under water that will make collisions between ships in the absence of gross negligence impossible. On June 3 this apparatus was publicly demonstrated in Massachusetts Bay. Representatives of the press heard Morse code messages through the water from a collier coming from Cape Cod at a distance of 13 miles. Three previous tests gave similar results. If accidents can be averted no lives will be endangered. Most accidents are due to lack of warning, and such accidents can be averted. If a small fraction of the money spent to avoid the consequences of a wreck were spent to prevent the wreck we should have no more of them. Everyone interested in safety at sea should realize that by the use of sound under water the chief dangers of ocean travel can be removed."

The proceedings at the annual meeting of the stockholders of the United States Steel Corporation, held April 20, 1914, have been published in pamphlet form by the National Tube Company, Frick building, Pittsburg, Pa., and a copy will be sent free to any of our readers upon request. It is interesting to read some of the abstracts given from statements made by employees who are stockholders. The following are some of these statements: "In the first place we are receiving more money for the iron we are making than in any competing company that I know anything about. Perhaps you are aware of the fact that I am from a community wherein there are a great many so-called independent companies, some very large ones, within a radius of 50 or 60 miles. We are very familiar there, as workmen usually are, with each other. We have competing plants in our own town; we mingle together a great deal. For several years we have been comparing the scale. I find on twenty-seven of the gages, for instance, in the rolling mill, that we are receiving from the Corporation an average of 85 cents a ton more than any concern that I know of which is a competitor, practically 9 percent more."——"Perhaps men were employed by interests who don't treat their men right; I do not know. I am satisfied the Legislature meant well, but they were misinformed. I simply state, to attempt to make my point, that the public should know the facts. I sometimes feel, if you will excuse the expression, that some of our demagogues who pretend to be laborers' greatest friends, after all are laborers' greatest enecies."——"There are many other ways which I might enumerate in which we have benefited. But the sanitary conditions have been so greatly improved that no man, I think, can describe the change that has been made. I might mention that I have worked in rolling mills and on slab mills and plate mills where it was very undesirable; you could scarcely tell whether it was a swarm of bees or what it was; we were simply pestered with flies. We have waded in the mud, in rain, in snow, to and from the closets, etc., without any roof on. I have had that experience, and I am reasonably sure at least that these other gentlemen here have had the same. And then if we would take our lunch and sit down, our biggest job was to keep the flies off. There is a great thing that has been accomplished by the Steel Corporation; and I always feel like resenting the charge that they were forced to do it. My experience is that they were never asked to do it, it was volunteered for the benefit of the workmen. Now we do not have things like that; we have no odor about the plant of any kind."

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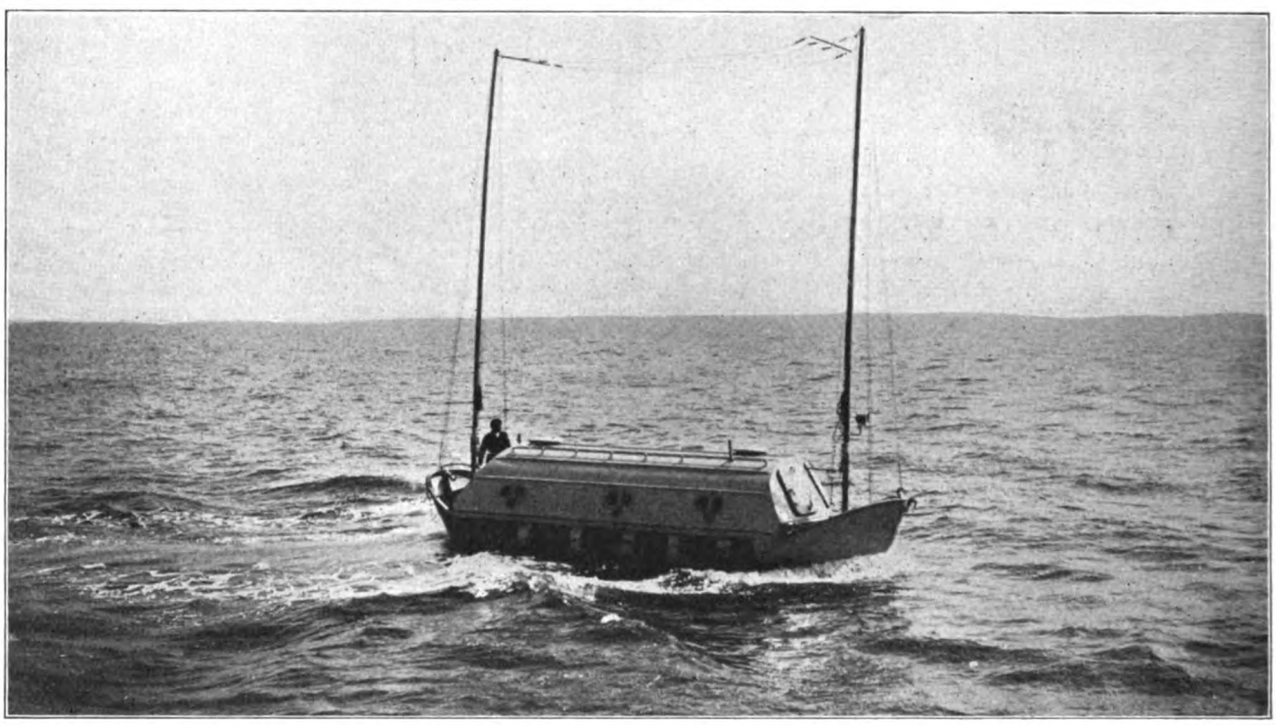
LUNDIN LIFEBOAT SYSTEM

Adopted by the United States Army Transport Service

The "Lundin" system is the only complete system in the world to-day. The various units comprising this system, viz.: Lundin Decked Life Boats, Lundin Power Life Boats, Standard Open Life Boats, Welin Davits, Non-Toppling Blocks, Lundin Davit Falls, Tilting Chocks and Automatic Gripe Release, are respectively the best of their kind on the market, and, as here combined, form a system giving the highest degree of efficiency, dependability, simplicity and durability.



30 ft. Lundin Housed Power Life Boat with 50 persons under the House

FEATURES OF THE LUNDIN HOUSED POWER LIFE BOAT

1. It is thoroughly seaworthy and as nearly unsmashable as is possible to build a life boat.
2. It is self-righting and uncapsizable.
3. It is provided with self-bailing arrangement to quickly relieve the boat of any water that might be shipped.
4. The housing affords protection to its occupants from the weather and seas.
5. The driving parts, such as the propeller and the shaft, are thoroughly protected from possible damage.
6. Its form and size permit it to be easily and quickly maneuvered when first launched or when the engine is disabled.
7. It is provided with means for towing other life boats and keeping them together.
8. It is equipped with a line carrying gun to enable it to establish a connection from a stranded ship to the shore or to rescue ships.
9. It is equipped with a thoroughly protected Marconi wireless outfit of wide radius.
10. Engine of a thoroughly up-to-date type is installed.
11. Etc. Lack of space prevents enumeration of the other features. We will be glad to furnish further information upon request.

Let us solve your life boat problems

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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A new electric drill is described in a circular just published by the Independent Pneumatic Tool Company, 1307 Michigan avenue, Chicago, Ill. "Electric motors have reached a high point of standardization, so that to obtain a maximum of efficiency it is necessary to employ mechanical means. This we have done, using our pneumatic tool experience in the design and manufacture of this new line of Thor electric drills. For instance, we import from Germany Hess-Bright ball bearings, upon which we suspend our armature shaft—these bearings giving a minimum of friction and allowing us to run our armature at a high rate of speed without danger of burning the bearings. The countershaft and spindle are supported on roller bearings, as they run at a slower speed and are compelled to withstand the stress of all side thrust put upon them by the forcing of a drill through the work. The trust on the spindle is taken care of by a ball thrust bearing which is located in the center plate. Thor electric drills are sturdy in construction, and will stand up under hard service. We aim to make our drills do their rated capacity of work faster than our competitors' drills. At the same time you will find that our drills are lighter in weight than the corresponding sizes of our competitors' tools. On all drills up to and including the 9/16-inch size we use cast aluminum alloy for both the field case and gear case. All motors are equipped with a removable pinion, which screws onto the armature shaft up against a taper, so there is no danger of springing same out of line. This pinion when worn out can be unscrewed and replaced with a new one, doing away with the necessity of replacing an entire armature, as is necessary on drills of other makes. The commutator, armature and fan are keyed on the armature shaft with square keys and can also be renewed when worn out. The removal of the brush cover can be accomplished by unscrewing one nut, thus giving immediate access to the brushes for any adjustment necessary. The switch is of the four-contact point type, breaking both sides of the line simultaneously, this giving longer life to the switch than could be attained by using one which breaks only one side of the line and has but two contact points. The motor is held in positive position by a clamp screw, and is locked by a stator set screw. Each type of drill we manufacture can be equipped for different drilling speeds by simply changing two gears located in the gear case. The different gear ratios are designated by the letters *X*, *Y*, or *Z*, for high, medium or slow speed, respectively."

THE GUN-CRETE COMPANY has opened its new offices in the McCormick building, Chicago, Ill. This firm specializes in cement-gun work for engineering and industrial structures. "It has at its disposal a large amount of the most modern cement-gun equipment and a very efficient working organization. The Gun-Crete Company makes a specialty of steel protection work, water and fireproofing, etc., by the cement-gun process, and also of the lining of reservoirs, tunnels and of the numerous different applications of the cement-gun process along the engineering lines. Mr. Carl Weber, the president of the Gun-Crete Company, is undoubtedly one of the best-known concrete engineers in America. He is the inventor of the reinforced concrete chimney, of which thousands have been built in this and foreign countries, and has designed and erected a large number of other important engineering structures. He has been connected with cement-gun operations for some time, and is considered to be one of the leading experts in this kind of work."

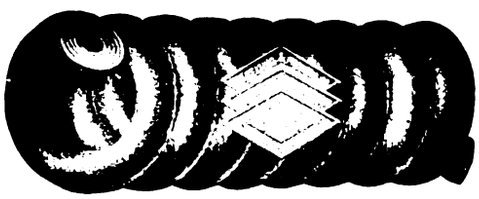
Shallow boiler specialties, adapted for use on locomotives, marine and stationary boilers, hydraulic pressure tanks, separators, etc., are described in a circular just issued by Bridgman Bros. Company, 1422 Washington avenue, Philadelphia, Pa. "The body of the Shallow safety gage is so constructed that the pressure and water entering from the port hole in the boiler through gage must pass the safety checks, thus establishing the boiler pressure around the safety checks before water enters the glass. It will be noted from the cut that the safety checks are held away from their seats by their own weight. It is absolutely impossible for these checks to be closed from any external manipulation or in any other manner other than disproportion of pressure between the boiler and internal air. Both checks close upwards, as shown by the arrows, which is the direction in which the water takes before it enters the glass. Consequently when the glass is broken the pressure from the boiler takes the path of least resistance, which is toward the atmosphere; thus driving the checks against their seats until such time as glass can be renewed. The glass is renewed by turning the hand valve, thus cutting off the boiler pressure, and immediately the safety checks fall from their seats by their own weight. The glass is then inserted. The hand valve opened and gage is again in working condition. The valve is self-cleaning, by blowing the drips once a day."

COBBS HIGH PRESSURE SPIRAL PISTON

AND

VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

NEW YORK BELTING AND PACKING CO.

91 and 93 Chambers Street, NEW YORK

LONDON, E. C., ENGLAND, 11 Southampton Row

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Hydraulic dredges are described in some pamphlets published by the Ellicott Machine Corporation, Baltimore, Md. One of these pamphlets illustrates Isthmian Canal dredge *No.* 86, which was designed and built by the Ellicott Machine Corporation. The view shows the dredge entering Gatun Locks, Panama Canal. "This dredge has pumped coral sand and rock through 7,200 feet of pipe line without a delay."

"Marine Installations" is the title of a new list of marine users got out by the Brunswick Refrigerating Company, 132 Jersey avenue, New Brunswick, N. J. This booklet contains the names of 182 boats equipped with a total of 218 plants. The booklet, and others relative to marine refrigeration, will be gladly sent upon request at the company's main office in New Brunswick.

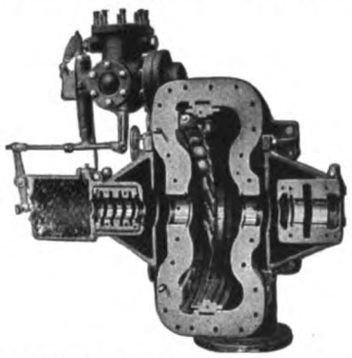
"Tool Steel and Its Uses" is the title of a booklet published by the Bourne-Fuller Company, Cleveland, Ohio. This booklet tells how to save money on tool steel, and a copy should be in the hands of every person interested in the subject. One will be sent free to any of our readers upon request. The Bourne-Fuller Company states: "One of our clients was using a tool steel at 52 cents a pound without getting satisfactory results. We analyzed his needs and supplied a 45-cent steel that did the work to his satisfaction. You, too, can get better results from your tool steel by letting our experts study your problem. In many cases we can supply a better steel at a lower price."

"The simplest and strongest drive for drills" is the claim made for its drills in Circular No. 19-H, issued by the Cleveland Twist Drill Company, Cleveland, Ohio. This is "because the strain of driving is taken by two large surfaces and the shank is amply strong to resist this strain. The flat taper shank is of original design. Its rounded, narrow edges are a part of a true taper cone. The flat sides also taper. The drill and shank are one and the same piece of steel, forged without weld or joint from the original bar. This drive is so strong and simple that we can guarantee the shanks unbreakable. It is a 'Paragon' high-speed drill that holds the world's drilling record."

Nozzles, Buckets and Guide Vanes of

DeLaval Class "C" Turbines

Are Easily Renewable



Any part of this turbine may be inspected, removed or renewed after lifting the casing cover and bearer caps. All parts are made to limit gages and are strictly interchangeable.

Built in all sizes and speeds suitable for driving power plant auxiliaries, such as boiler-feed and circulating pumps, blowers, generators, etc.

Ask for Catalog "C-46"

DE LAVAL

Steam Turbine Co.

Trenton 73 **New Jersey**

IMPORTANT ARTICLES

PUBLISHED IN

INTERNATIONAL MARINE ENGINEERING

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The Severity of Winter Weather at Sea as Revealed by the Camera. Illustrated
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- Serious Accident Due to Shortness of Water. Illustrated.
- Securing a Loose Piston.
- Friction.

JUNE, 1914

Difficult Dredging Operations at Bermuda. Illustrated.
Gasolene (Petrol) Motor Bucket Dredger. Illustrated.
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Two New Dipper Dredgers at Panama. Illustrated.
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Digging Hard-Pan with a Hydraulic Dredge. Illustrated.
Trials of a Unique Drag Suction Dredger. Illustrated.
A Sea-going Twin-screw Barge-Emptying and Suction-Loading Dredger for Tientsin, China. Illustrated.
The Powerful Rock Lifting Dredger Cowpen. Illustrated.
A New Hydraulic Dredge For River Work in Cleveland. Illustrated.
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American-Ball Four Cylinder Triple Expansion Dredge Engine. Illustrated.
Priestman Grab Dredger. Illustrated.
The Westinghouse Marine Steam Turbine. Illustrated.
The New Hamburg-American Liner Vaterland. Illustrated.
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Letters From Practical Marine Engineers:
- A Condenser Breakdown. Illustrated.
- Further Remarks on the Corrosion of Boilers Using Sulphurous Oils.
- Successful Arrangement of Piston Rings on Horizontal Marine Engines.
- Air Pumps.

The Loss of the Oklahoma as Viewed by the Bureau Veritas.
An Interesting Boiler Repair. Illustrated.
Marine Engineering Academy.

FOR FLYING BOATS USE **JEFFERY'S MARINE GLUE**

Use our Waterproof Liquid Glue, or No. 7 Black, White or Yellow Soft Quality for waterproofing canvas covering of flying boats. It not only waterproofs and preserves the canvas but attaches it to the wood, and with a coat of paint once a year will last as long as the boat. For use in combination with calico or canvas between veneer in diagonal planking, and for waterproofing muslin for wing surfaces.

Send for samples, circulars, directions for use, etc.

L. W. FERDINAND & CO., 201 South St., Boston, Mass, U. S. A.

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Ropes of all kinds for marine purposes are described in catalogues published by the Waterbury Company, 80 South street, New York. This company makes a specialty of manila rope for hawsers, towing lines and similar uses; wire rope for hoisting purposes and for rigging, and fiber-clad wire rope, which it states is the ideal rope for boat and cargo falls.

"A Giant Among Giants." This is the statement made in a catalogue published by Bucyrus Company, Postoffice Box C, South Milwaukee, Wis., of the Bucyrus 15-yard dipper dredge *Gamboa*. "This dredge and her sister ship, the *Paraiso*, the two largest dipper dredges in the world, are now digging out the slides of the Panama Canal. The Bucyrus Company has built more high-powered hydraulic dredges for hard digging than any other manufacturer in the world."

In the monthly bulletin, *Plymouth Products*, published by the Plymouth Cordage Company, North Plymouth, Mass., is printed a great deal that is of interest to all users of rope. In a recent issue is a picture of the launching of the steamship *W. Grant Morden*, the world's largest fresh-water freighter, at the yard of the Western Dry Dock & Shipbuilding Company, Port Arthur, Ontario, on April 4. This ship was side-launched. This method, of course, involves a tremendous strain on the launching equipment. The ship in question was launched by aid of "Plymouth" rope, and the manufacturer states that this is only one of many great concerns which use "Plymouth" rope for launching tackles, triggers and hawsers.

"Renewo" valves are described by the Lunkenheimer Company, Cincinnati, Ohio, in a circular just issued. In addition to calling attention to the fact that these valves are durable, that all parts are renewable, and that they are regrindable, the manufacturer mentions the following important features: "The original Lunkenheimer union connection between hub and body protects the uniting threads from corrosion and strengthens the neck of the body. Stuffing-boxes have gland follower on all sizes except ¼, ⅜ and ½ inch. Repackable under pressure when wide open. Self-cooling hand-wheel provided on medium inside screw pattern valves, sizes ¼ to 2 inches, inclusive, and extra heavy sizes ¼ to 1½ inches, inclusive. Bodies have full and unobstructed passages through them, the smallest area being in excess of that of the nominal diameter of connecting pipe."

Difficult dredging problems are described in a circular published by the Morris Machine Works, Baldwinsville, N. Y. "Let the Morris engineering department show you how to save money on your next dredging job by the use of the Morris hydraulic dredge. Let us show you how its cost, considering capacity, is less than any other type of dredge. Morris dredges are in operation to-day handling over 3,000 cubic yards per hour, delivering material in the same operation over radii of 5,000 feet and more. Wrte to-day for full particulars and illustrated catalogue."

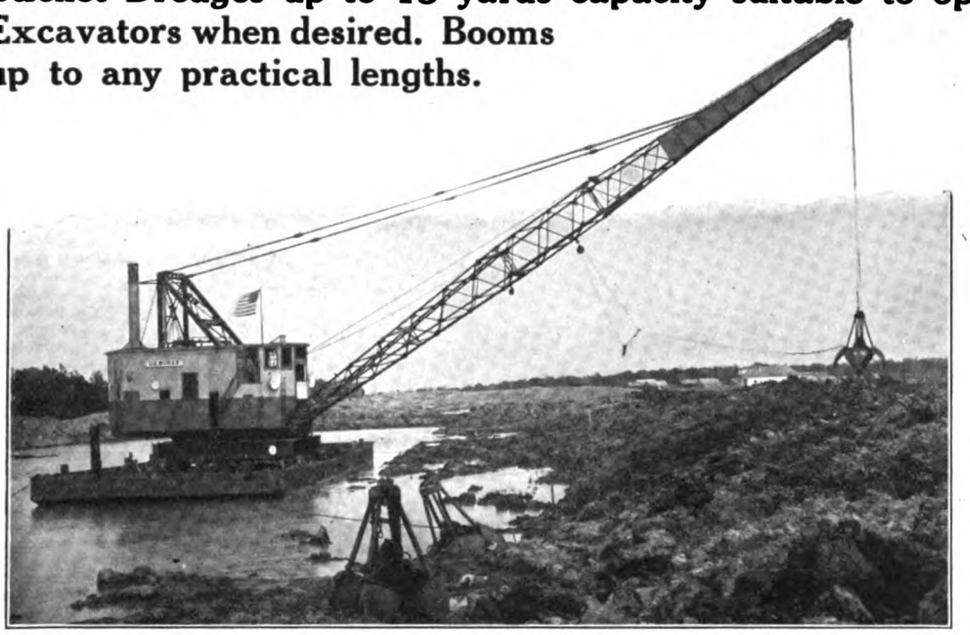
A patent ratchet wrench, made by the L. S. Starrett Company, Athol, Mass., is a mighty handy thing to have on board ship where machinery is cramped, and in dark places this tool is especially useful. It will turn out any standard nut or bolt in all sorts of difficult places—places where the ordinary monkey-wrench is useless. The ratchet permits rapid action with only a short arc swing. The extension reaches into otherwise inaccessible places. This wrench is described in Catalogue 20-L, a copy of which will be sent to any of our readers on request.

"Lifting the 130,000,000-Pound Quebec Bridge" is the title of an illustrated booklet just issued by the Electric Controller & Manufacturing Company, Cleveland, Ohio. "The following article is reprinted by permission, from a paper by Mr. H. F. Stratton, appearing in the December, 1913, issue of *The Engineering Magazine*. With the exception of the motors all of the electrical apparatus used in erecting the Quebec Bridge is being designed and supplied by The Electric Controller & Manufacturing Company. This is undoubtedly one of the most exacting and interesting problems of electrical control that has been presented for practical solution."

Marion dredges are described and illustrated in Catalogue 53, published by the Marion Steam Shovel Company, Marion, Ohio. "In the long run you want a dredge that is built to last—one that will work year in and year out—one that combines large capacity with constant service. And that's just what we offer you in Marion dredges, for they represent thirty years' experience in designing hundreds of dredges. There is a Marion dredge for your work—no matter what or where the work may be. There's a Marion that will meet your most exacting demands—in economy of operation—in year-in-and-year-out service. There is reliability and real profit for you in a Marion."

FOR LAND OR SEA

Bucket Dredges up to 15 yards capacity suitable to operate Drag Scraper Excavators when desired. Booms up to any practical lengths.



Traveling Locomotive Crane with 110′ boom, 3 yard Orange Peel Bucket to operate on Land or from scow, built for Mississippi Levee Board, New Orleans.

Locomotive Cranes
Unloading Machinery
Dock Equipment
Car Dumpers
Clam Shell and Orange Peel Buckets

The McMYLER INTERSTATE CO., Cleveland, Ohio

NEW YORK: 50 Church Street
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Flanges, union couplings and other boiler pipe fittings are described in a booklet published by the E. M. Dart Manufacturing Company, Providence, R. I. This company makes a specialty of flanges and union couplings for connecting screwed-end pipes that will stand high-pressure and keep tight.

Bushings—self-lubricating—are the subject of a circular published by the Graphite Lubricating Company, Church and John streets, Bound Brook, N. J. "Many marine accidents and some disasters have been traceable to bushings that needed oil. Eliminate any possibility of trouble in your case. Use Bound Brook bushings—self-lubricating—and give 100 percent efficiency and satisfaction. Be fair to yourself and us—try them. Specify Bound Brook."

A handsome pamphlet of photographs in color of the Panama Canal, reproduced from *Scribner's Magazine*, has just been issued by the Ingersoll-Rand Company, 11 Broadway, New York. In this booklet is also reprinted an article, "What the Canal Will Accomplish," by Emory R. Johnson, Special Commissioner on Traffic and Tolls. This is one of the most interesting and handsomely illustrated articles on this subject that has ever been printed. A copy of this pamphlet will be sent free to any of our readers who will write to the Ingersoll-Rand Company and mention this magazine.

J-M Permanite Packing is described in a catalogue just published by the H. W. Johns-Manville Company, Madison avenue and Forty-first street, New York. This packing is stated to make permanently tight joints, which can be broken any number of times and repacked with the same gasket. The manufacturer states: "We want to prove to you yourself at our expense that 'J-M Permanite' will do all that we claim for it. Without obligating you in any way we want to send you enough to test on your most troublesome joint. Remember, this won't cost you a cent."

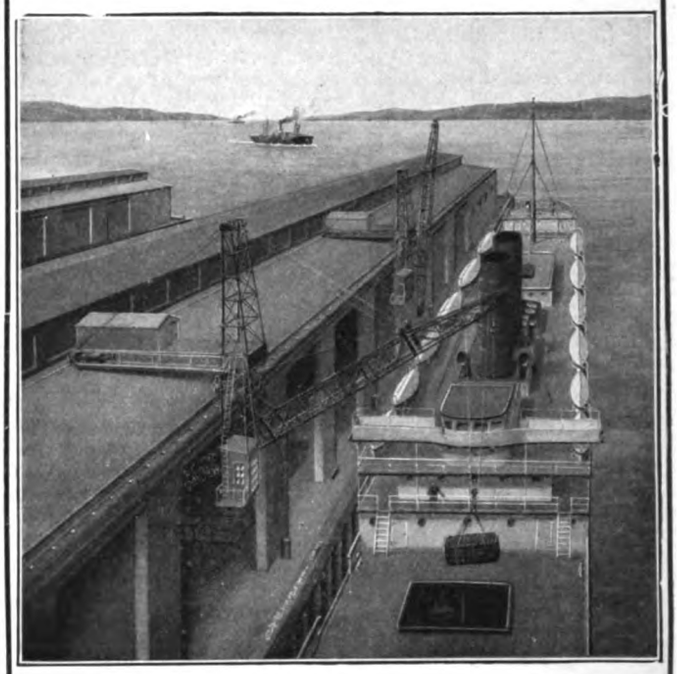
Steam engines are described in an illustrated catalogue just published by the Reeves-Cubberley Engine Company, Trenton, N. J. "In this catalogue is described the line of Reeves' engines as offered to-day, with such improvements as years of experience and power requirements have suggested. There is a difference in the various makes of engines. This difference lies chiefly in the technical knowledge used in designing and planning of the engine, together with the proportioning and designing of the various parts, in the kind of material used and in the skill of the mechanics employed. All these elements combined making up the organization. It is our aim to produce the best steam engines on the market. No expense has been spared to make this possible. Our engines, after continuous use for many years, are in operation by a most discriminating class of users. They have fully earned their reputation as being high-class steam engines. The many repeat orders received is a further testimonial of this efficiency. The tests for steam economy, mechanical efficiency and general behavior at Cornell University show both the excellent and remarkable results obtained over a wide range of load and conditions. Other tests made by private owners and reliable authorities show equally good results."

Compressed acetylene in holders for welding and cutting, is the subject of a circular just published by the Searchlight Gas Company, Karpen building, Chicago, Ill. "If you are a manufacturer, machinist, proprietor of a repair shop, garage, foundry or steel mill you are deeply interested in the possibilities and advantages of brazing and fusing heavy and light metals by the oxy-acetylene process. If you are engaged in the purchase and re-sale of heavy machinery, metals, scrap iron, etc., you are vitally interested in this process, which by all odds is the most economical and efficient method of cutting your product in small parts and sizes and preparing same for market. The Searchlight Gas Company, operating seventeen plants and branch offices, has been in the business of generating the purest form of acetylene for over four years. We are specialists in this particular line, have made a deep and careful study of the various methods necessary for the purification of the gas, and are generating at our conveniently-located plants millions of feet of this gas annually. In this progressive age prompt and efficient service is required in all lines of endeavor. An accident to your generator or some other contingency in connection therewith may suddenly deprive you of a gas supply sufficient to complete a profitable and very important job. Searchlight compressed in steel cylinders is always available, can be transported to any particular contract which you have secured and is ready for instant use when the gas is required and is released by turning on a valve. Searchlight is compressed in seamless drawn-steel cylinders, which have been tested and which have passed every restriction governing the manufacture of same."

THE SHAW

Electric Wharf Crane

Reduces Handling Costs---Saves Time



The Shaw Electric Wharf Crane travels along **the roof** of the pier shed and offers no obstruction on the deck area.

Freight is delivered to and taken from the **inside of the pier shed** eliminating inefficient rehandling.

The crane transfers the freight between the hatch and the pier in a straight line, which is obviously **the most direct route.**

On account of the straight line hoist and transfer, comparatively **high speeds** are practicable.

Exposure of freight to the weather is reduced to the absolute minimum.

Breakage is practically eliminated due to the perfect control of all motions by the one operator in the cab.

Manning, Maxwell & Moore, Inc.

Shaw Electric Crane Co., Dept.

119 W. 40th Street, New York

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The Vulcan process of oxy-acetylene welding and cutting of metals is described in Catalogue A, a handsomely printed and illustrated volume of 32 pages, just issued by the Vulcan Process Company, Minneapolis, Minn. The catalogue states that the Vulcan process of oxy-acetylene welding and cutting is the result of the development of improved apparatus for welding metals and cutting steel and other materials. The process is stated to be the latest and best, and to be largely the result of work in the company's laboratory and factory by engineers recognized as foremost in producing apparatus of absolute safety and efficiency, as well as of first-class quality in material and workmanship. This process is especially recommended for use in boiler shops, railroad shops, shipyards, machine shops and foundries, as well as in many plants of medium and small sizes. A copy of the catalogue will be sent free to any of our readers upon request.

BUSINESS NOTES

AMERICA

THE BRUNSWICK REFRIGERATING COMPANY, New Brunswick, N. J., report the following sales since the list given in the June issue: E. J. Dodge Lumber Company, San Francisco, Cal., steamship *Helens*, 2 tons; New York & Cuba Mail Steamship Company, New York City, sixth order, steamship *Guantanamo*, 4 tons; Crowell & Thurlow, Boston, Mass., third order, steamship *Edward Peirce*, 1 ton; Isthmian Steamship Lines, New York City, third order, steamship San Francisco, 2 tons. This makes a total of 189 boats equipped with a total of 225 plants. The refrigerating plant for the steamship has come to stay. It is needed; it is a big money saver; it is profitable. Over 60 percent of those companies who have ordered plants from the Brunswick Refrigerating Company have ordered the second, third or more plants. One concern has ordered a total of 41 plants, another 17, and the United States Government has ordered 32 plants. Literature on marine refrigeration will be sent upon request.

HUGE ORDER RECEIVED FROM CHINESE GOVERNMENT BY NEW YORK CONCERN.—The Niles-Bement-Pond Company, 111 Broadway, New York, has been awarded a contract, amounting to over $1,000,000, by the Chinese Government for the complete equipment of a small arms arsenal at Hanyang (near Hankow), China. These machines will be built at their Pratt & Whitney Works at Hartford, Conn., in a special department exclusively devoted to the manufacture of this type of machinery. The statements which have appeared in this connection have been without authority, as the contract was only received yesterday upon the arrival of the company's representative from Peking. The company was in competition with all the large gun machinery manufacturers in the world, but as in the case of the new Australian Government rifle factory, which was completely equipped by the Pratt & Whitney Works, the delivery limit, efficiency of the proposed equipment and the production time guarantee were beyond the ability of the competing concerns to equal. The contract calls for equipment to produce 100 complete army rifles per day and a considerable amount of other military equipment. It will include metal, wood and leather working machinery, fixtures, gages, etc. All parts must be so accurately made that they will be absolutely interchangeable, thus insuring the perfect working of each gun in time of action. An important factor in the securing of this contract was the guarantee of production. Under present conditions in China 90 hours' actual time is required for producing each complete rifle, while with the new equipment the time guaranteed is less than 23 hours. Scarcity of skilled labor is a matter which must be given careful consideration in cases of this nature. In the many years that the Pratt & Whitney Works has been building arsenal machinery this point has been taken into account, with the result that the success of the large number of arsenals equipped by them in all parts of the world stand as unassailable arguments in their favor. The plans for the Chinese arsenal are such that no one man will perform more than one or two simple operations, and therefore will soon become proficient on just that class of work. Experienced engineers and gun makers from the Pratt & Whitney Works will instruct the Chinese workmen after the equipment is installed. While the terms of payment have necessarily been made to suit the present financial situation of the Chinese Government, the company feels confident, as a

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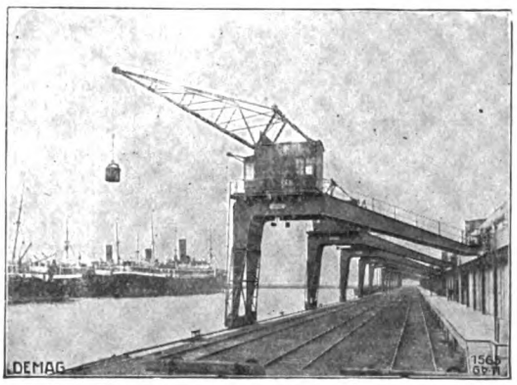
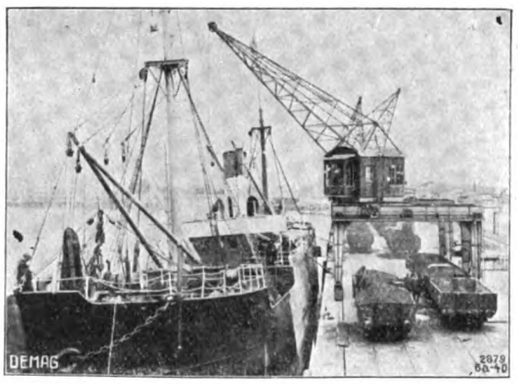
HARBOR CRANES





IN SUCCESSFUL OPERATION IN LEADING PORTS ALL OVER THE WORLD
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result of their representative's report, that the stability of the existing Government is assured, and that the Government will soon be in possession of adequate revenues as a result of the reforms and economies which are now being effected. Various other works of the Niles-Bement-Pond Company make a specialty of machinery for the manufacture of heavy ordnance and armor plate. A gun lathe for machining ordnance up to 16 inches bore has recently been shipped by them to Austria. Ten freight cars were required to carry this one machine from their Philadelphia works to the seaport. Several of these large gun lathes have been built by them for the Italian Government arsenals, and a number of very large lathes, boring and turning mills and planers have recently been shipped to England, France and Germany. In a recent shipment to France was included the largest boring and turning mill ever exported from the United States.

EVERY ENGINEER INTERESTED in the subject of packings should write Greene, Tweed & Company, 109 Duane street, New York, and ask for a free working sample of "Palmetto" packing. The manufacturer states that this packing is different from all others, because it keeps the bearing surface rod automatically lubricated by reason of each single strand having its own abundant supply of graphite grease lubricant—"all our own special process."

PASSENGER AND EXCURSION TRAFFIC between all ports on the Great Lakes has opened up at record-breaking figures. The Detroit & Cleveland Line had boats out of Cleveland several times in May which were unable to supply all applicants for berths—something that has rarely occurred before the middle of June in former years. And excursion business on Decoration Day out of Detroit and Chicago, the two principal lake ports where an enormous excursion business is done, broke all previous records. Experience has taught that on the Great Lakes at least passenger traffic to and from all summer resorts is heavier in season when business is seemingly dull or a trifle off. People seem to have more time to spend in such years and go more generally. There is little as yet to encourage iron ore, grain and carriers of other coarse freights to look for a marked improvement in the volume of business in the near future. In the ore trade only about one-half the amount of ore was moved in April and May that was brought down the lakes in the same months of last year, and quite a number of the large bulk carriers have not as yet turned a wheel this season, on the hope of an early adjustment of the advance asked for in railway rates.

RECORD GATE VALVES FOR NEW YORK EDISON COMPANY.—Perhaps the largest steel gate valves for superheated steam yet installed in any of the immense power plants of the metropolis are those recently built by the Nelson Valve Company, of Philadelphia, for the New York Edison Company, New York City. That these valves are strictly in keeping with the proportions of this, one of the largest public service plants in the world, is best shown by the photograph in which the ordinary man appears but a dwarf when compared to the valves beside him. Seven of these valves of the two types shown were built and shipped by the Nelson Valve Company in fifty days from the receipt of the order, a remarkable record when it is considered that new patterns had to be made throughout. Each valve, from top of stem, when valve is open, to bottom of body, stands 9 feet 1 inch in height, and the two types weigh 3,600 and 3,900 pounds, respectively. The valve shown at the left of the photograph is hand-operated, though made with a large bushing just below the hand-wheel, which may be removed for attachment of spur gears, if desired. The left-hand valve is fitted with spur gears bevel gears and chain for chain operation. The New York Edison Company will install this valve on a vertical pipe line and run the extension stem (to which is attached a bevel gear) through a wall for operating from another room. The valve can also be operated by chain, the chain wheel being attached directly to the valve stem. These valves will be used by the New York Edison Company on header lines, 200 pounds pressure, 150 degrees superheat. Regarding the details of construction, the Nelson Company says: "The valves have steel body and bonnets, with seat and disk wings of forged monel metal and stem of rolled monel. Guides in both bonnets and body are machined, also wing lugs on the gate disks. Brackets are provided on the inside of the yoke to support the gland when repacking the stem, eye-bolts at the top of the bonnet swing out of the way so that the valve may be repacked. Both the steel and monel metal used in these valves have a tensile strength of over 65,000 pounds per square inch, and the coefficients of expansion of the two metals is practically the same. This last point is an important one, since with the great changes in temperature where superheated steam is used the expansion and contraction will cause a loosening of the seat rings and other parts were this point not taken into consideration and provided for.

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of highest efficiency and reliability resulting from 19 years of experience; over 3,000,000 hp. built and building.

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of small and large power for propelling units and auxiliary drives. Over 95,000 hp. built. Cruising gears for two U. S. Battleships building.

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of small and large power for propelling vessels of all classes and for auxiliary drive. The most efficient propelling unit built.

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built in sizes from 1 kw. up—both direct-connected and gear driven. These units are simple, reliable and very efficient.

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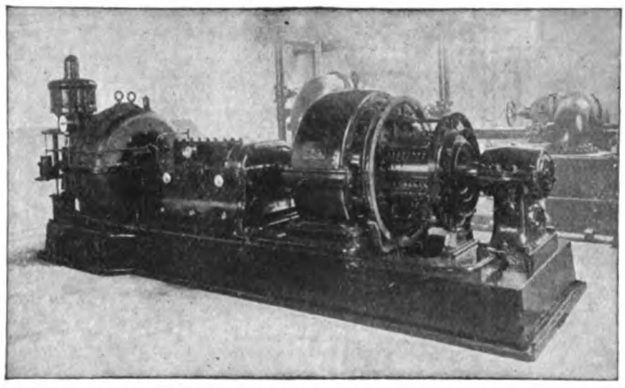
for operating main turbine from bridge. Instantaneous operation, avoids confusion and accidents. Found satisfactory in test by Navy Department



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THE LALOR FUEL OIL SYSTEM COMPANY has removed its office and factory from 1326 Chestnut street, Philadelphia, Pa., to 527-529 Colvin street, Baltimore, Md.

THE DULUTH OFFICE of the H. W. Johns-Manville Company has been moved to new and larger quarters at 327 West First street.

THE C. M. LANE LIFEBOAT COMPANY has removed its offices from Erie Basin to 246-252 Huron street, Brooklyn, N. Y. The new offices are much more spacious and convenient than those in the old location.

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TRADE PUBLICATIONS.

AMERICA

A copy of "File Filosophy," published by the Nicholson File Company, Providence, R. I., will be sent free to any of our readers upon request. This booklet, according to the Nicholson File Company, gives a fifty years' education on files in one hour.

Terry vertical turbines are described in a circular just published by the Terry Steam Turbine Company, Hartford, Conn. These turbines "have proved themselves by consistent, continuous work under severe conditions of operation. The turbine can be completely dismantled without disturbing alinement or steam exhaust connections. With the absolute reliability of the horizontal type of Terry forced lubrication, ball-bearing thrust immersed in oil, sensitive governor, this turbine fills many needs afloat and ashore. It has been adopted largely for driving deep-well pumps, condenser circulating pumps of both the wet and dry pit type, forced draft blowers, etc. Compact and of light weight, Terrys run without vibration, thus reducing cost and weight of foundations. The turbine, single stage, has a shaft extension to receive the fan or centrifugal pump. Built in all sizes, 5 to 600 horsepower, 3,600 to 500 revolutions per minute. Send for booklet *Testing Small Steam Turbines.*"

"Waterbury Dredge Ropes" is the title of a handsomely illustrated pamphlet just published by the Waterbury Company, 80 South street, New York. "Without ropes the most powerful dredge or steam shovel is an inert mass of machinery, unable to perform the work for which it was designed. With unsuitable, weak or imperfectly constructed ropes either becomes a constant source of peril to those operating it—an ever present-breeder of trouble and expense. Whatever division of opinion there may be among engineers and contractors as to the relative merits of various forms of digging and dredging machinery, there is none as to the necessity for the exercise of the greatest care in the selection and installation of the ropes—which are essentially the transmission of any type of digging machine. We are sure that no claims we could make regarding the quality of material used and the care taken in the manufacture of Waterbury wire ropes would carry a fraction of the weight of the pictures, records and descriptions contained in this pamphlet. It is irrefutable evidence that speaks for itself."

A spirally corrugated film feed heater is described in Catalogue 10-F just issued by Schutte & Körting Company, Twelfth and Thompson streets, Philadelphia, Pa. "Not only does the heater save weight and space by its greater heating transmission to a square foot, but by inserting one tube inside the other we get almost two square feet to the one in the same space where the tubes are single."

"Grinding" is the title of a pamphlet just published by the Lunkenheimer Company, Cincinnati, Ohio. Following is a quotation: "Many years ago, before it was realized that the life of a valve could be prolonged by regrinding the seating surface when worn, a valve that was not tight, or as near so as it was possible to make it at that time, was immediately replaced with a new one. The expense (not only the cost of a new valve, but of connecting and disconnecting the same) amounted to a considerable sum, and naturally created a great deal of dissatisfaction. Valve manufacturers soon realized that radical improvements were necessary, and although various designs were placed upon the market, none met with as great favor or gave as good results as the valve furnished with ground seating surfaces, and which could be reground when these surfaces became worn. In 1875 Mr. Frederick Lunkenheimer patented the well-known regrinding valve with union hub. While realizing the great importance of regrinding, he also bore in mind two other very important features that were absolutely necessary to make the valve a success. First came the material. Almost any grade of metal can be ground, just as any knife can be sharpened, but the length of the life of a seating surface or a sharp edge on a knife, as is well known, depends upon the material. There are inferior valves on the market to-day, made similar to the regrinding pattern, but with the seating surfaces unground and simply machined. The low cost of these valves does not permit of spending the time in grinding, and even though they were ground, under limited service they would become so worn that a new valve would have to be substituted, owing to the poor metal used. The material adopted for the valves as manufactured by Mr. Frederick Lunkenheimer was a carefully selected bronze composition, hard and close-grained, insuring the longest possible service. Wear eventually took place on the seating surfaces, but the material in these valves permitted the possibility of regrinding the surfaces many times, thereby increasing the life of the valve to such an extent that when the entire valve required renewal it was found, in many cases, likewise necessary to renew the connecting pipes."

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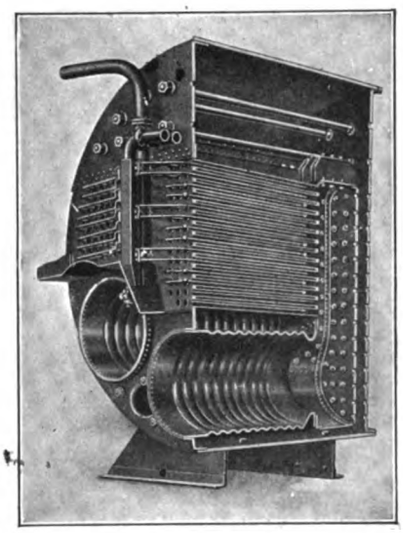
Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

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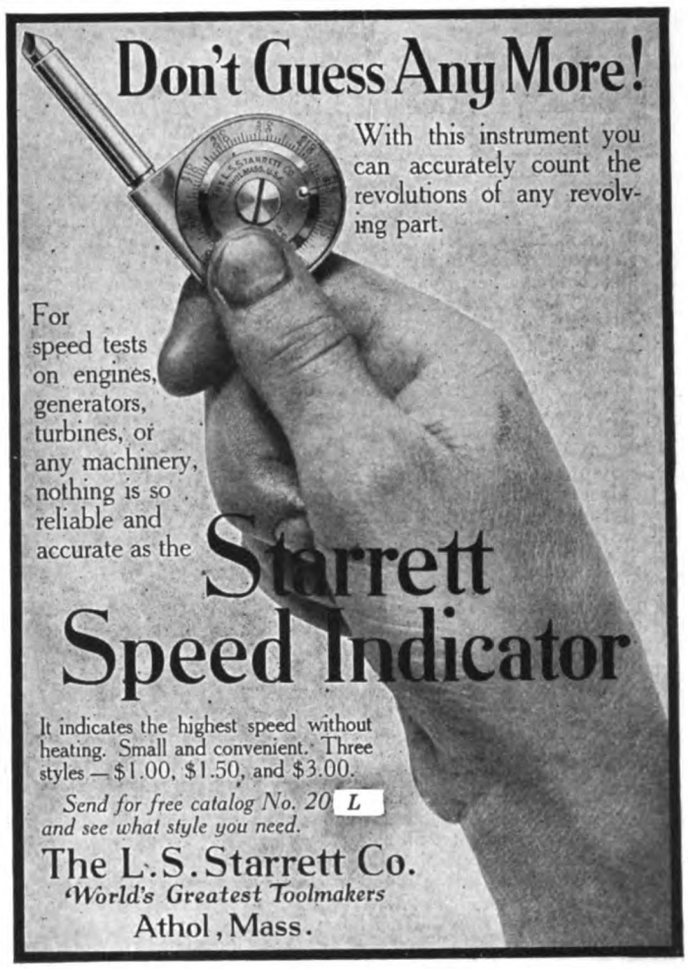
The Williams regrinding valve is described in a catalogue published by the D. T. Williams Valve Company, Cincinnati, Ohio. "The Williams disk and seat is made of a bronze so hard that it takes nearly 1,900 degrees to melt it. The temperature of steam at 200 pounds is about 385 degrees, so that it does not affect this metal in any way. After much hard service the seat of the Williams valve may wear a little, but it is not necessary to get a new valve. Instead a few drops of oil, some emery, and a few turns of the valve will regrind a new seat."

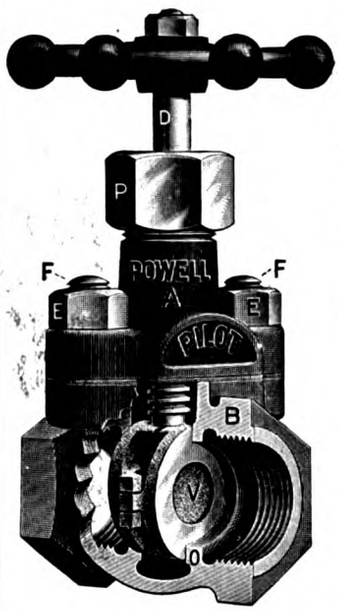
Phosphor bronze cold-drawn seamless tubing is described in a circular issued by the American Brass Company, Waterbury, Conn. "The demand for a better and more uniform material for bushings, bearings, etc., has been met by the production of phosphor bronze seamless tubing. This tubing is hard, smooth and commercially true to size, but where extreme accuracy is required, as for bearings, a sufficient allowance in thickness should be made to permit machine finishing. Phosphor bronze seamless tubes are now used in place of cast bearings in many instances, with satisfaction and economy. Made of large or small diameters and of almost any required wall thickness."

The Stow flexible shaft is described and illustrated in a 96-page catalogue just published by the Stow Manufacturing Company, Binghamton, N. Y. This device is stated to be especially useful and valuable in shipyards and on board ship. A copy will be sent free to any of our readers upon request. Among the many uses for which Stow flexible shafts are said to be particularly well adapted is for tapping and reaming machines. The following description is given of the Stow tapping and reaming machines used in conjunction with the flexible shaft: "These machines are designed for tapping and reaming staybolts, holes in boilers, and reaming in bridge work. Our No. 1 is preferable for light work on account of its weight, but for heavier work we recommend our Nos. 2 and 3, as having increasing diameter and face of gears, also pitch of teeth—the bearings are also longer and larger; they are both powerful and durable machines. Nos. 2 and 3 have a square hole in both ends of the tapping spindle, so that by turning machine over and attaching a tap, it will back it out without stopping or reversing motion of shaft. Since the issue of our last catalogue a demand has been made for our Nos. 2 and 3, with an extension of tapping spindle with a larger hole in the same. We have, therefore, added to our list Nos. 4 and 5. No. 4 is the same as No. 2, except that the spindle projects 2 inches beyond the bearing and has 1¼-inch square hole in one end, 1⅝ inches deep. No. 5 is the same as No. 3, except the projecting spindle, etc., as described in No. 4."

Suspended concrete bins are described in a catalogue just issued by the Brown Hoisting Machinery Company, Cleveland, Ohio. This catalogue is devoted to the subject of handling coal and ashes in power plants. "Every power plant presents the problem of providing sufficient storage space for coal and ashes and an economical method of handling the same. This has always been one of the important and difficult problems with which the engineers have had to contend in power house design, principally on account of the corrosive action of the coal and ashes on steel. To-day practically every boiler is being installed with an automatic stoker. And an overhead bin is being used for storing the coal, from which the coal flows directly into the stokers. It is a well-known fact that steel bins for coal and ashes are one of the most expensive installations used in connection with the power plant. This is due to the high cost of maintenance incurred by trying to resist the destructive action of the acid from the coal and ashes on the steel. Consequently, it has been the aim of engineers to build these bins of a material that would resist effectively the destructive action of the acids, and at the same time give an efficient and economical installation together with a minimum cost of maintenance. The Brownhoist patent suspended bin is used for storing coal, coke, ashes, cement, sand and other materials. It is a concrete bin, with our Ferroinclave (page 7) as the reinforcement, and is especially desirable for storing materials that corrode or deteriorate the ordinary steel-plate bin linings. Occasionally the coal within a bin becomes ignited from spontaneous combustion. The Brownhoist suspended bin is so designed that all the steel is protected by concrete, which prevents any damage being done by fire. In designing this bin we have paid particular attention to securing a form of a bin that would give a maximum storage in a minimum space and at the same time practically clean itself. But the main advantage is in having all of the steel that would naturally come in contact with the storage material protected by concrete. On request our engineers will submit designs and suggestions on installing the concrete bin with coal and ash-handling machinery in any new or old plants."



POWELL VALVES



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¶ 2. Made with bronze trimmings when required for medium steam pressure.

¶ 3. The Double Disc—not a wedge disc — but two discs with ball and socket back, smooth working and self-adjusting.

¶ 4. Made in all iron for cyanide solutions and other acids that attack bronze.

¶ 5. All working parts are made to gauge and are interchangeable.

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De Laval oil reclaiming centrifugals for handling exhaust steam condensate are described in a catalogue which the De Laval Separator Company, 165 Broadway, New York, has just published. "The separation of oils from water with which they have become mixed, so that either, or both oil and water, may be 'reclaimed' for further use, is made possible by the use of the De Laval oil reclaiming machine. Any mixture of oil and water which may range from *mostly* water with a slight trace of oil to *mostly* oil with a slight trace of water, passed through our reclaimer will be discharged, the oil free from all but a trace of moisture from one spout, and water free, or nearly free, of oil from another. While this separation is taking place any gritty or metallic particles which from any cause may have been introduced are removed from both the oil and the water. This type of De Laval centrifugal is readily adaptable to a wide range of usefulness, but this bulletin is intended to cover only the application of the reclaimer for handling condensate, making it a power plant auxiliary which increases efficiency by reducing losses heretofore thought unavoidable."

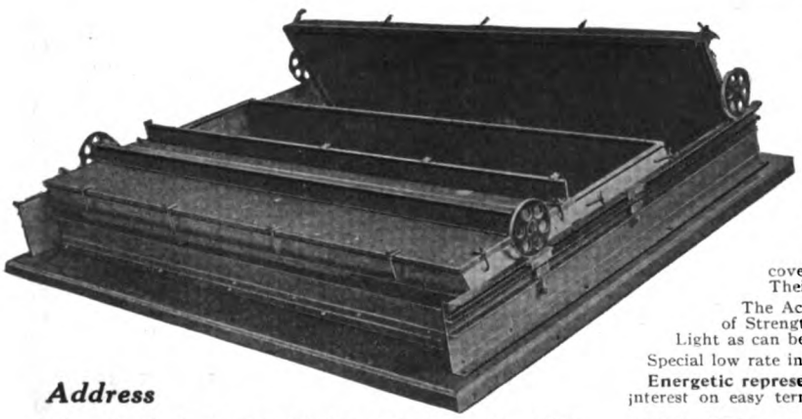
Sanitary fixtures for marine use are described in Catalogue E, published by A. B. Sands & Son Company, 22 Vesey street, New York. This is a very complete catalogue, and a copy should be in the hands of every naval architect, shipbuilder and owner of vessels of any kind.

A speed indicator for applying tests on engines, generators, turbines or any machinery, is one of a large line of engineering specialties described in Catalogue 20 L published by the L. S. Starrett Company, Athol, Mass. A copy of this catalogue will be sent to any engineer upon request.

Dry kilns for timber products are the subject of Bulletin No. 20, just published by the American Blower Company, Detroit, Mich. "This latest edition of our dry kiln catalogue contains much that will be of interest to every manufacturer of wood products. In it will be found no freak ideas nor untried schemes, yet it covers all the latest ideas which have been gained by constant attention to, and close observation of, the smallest details. Every year we are approached by many inventors with ideas to sell. We investigate them all, as we are constantly seeking improvements in the art which are of real value. Most of them, however, are not based upon sound principles; the long and varied experience we have had, covering thousands of installations, enables us to judge of their merits more readily than the individual whose experience has been confined to two or three kilns at the most."

"Drill Chips"—anniversary number—has just been published by the Cleveland Twist Drill Company, Cleveland, Ohio. "A Drill in the Making" is described in this issue, and the process is fully illustrated, making a very interesting article. A copy of this booklet will be sent free to any of our readers upon request. "With drills and reamers, as with other necessities, service is the only true test of value. Artistic advertisements, high-sounding claims, verbal patterings—these do not constitute maximum tool values. Primarily you want holes not drills, and the drill that gives the greatest number of holes between grindings, and consequently the greatest hole production during the life of the tool itself, that is the drill you should have. The actual figures resulting from numerous tests, carefully conducted and recorded by our customers, indicate that Cleveland drills and reamers excell in hole production any other similar tools in the world. Furthermore, we believe that a comparative test in your own shop will convince you of this imporant fact."

"Marine Engine Economy" is the title of a circular just published by the Schutte & Körting Company, Twelfth and Thompson streets, Philadelphia, Pa. Among the devices made by the Schutte & Körting Company, the use of which produces marine engine economy, as stated above, is the Körting grease extractor, which is described in the catalogue. "Since oil and grease from the auxiliaries of a steam plant interfere considerably with the proper working of the boiler, its removal from the condensation in steam engine installations is essential. The grease extractor described herein is exceptionally well suited for these purposes on account of its thoroughness in filtering or extracting, simplicity as regards operation, installation and maintenance and also of its compactness. By means of a filtering material wrapped in separate layers in such a manner that it can be easily and quickly renewed, every particle of water undergoes a thorough and perfect filtering treatment. Consequently the heating surfaces are kept clean, the quantity of water and steam consumed is reduced and the repair expenses diminished."



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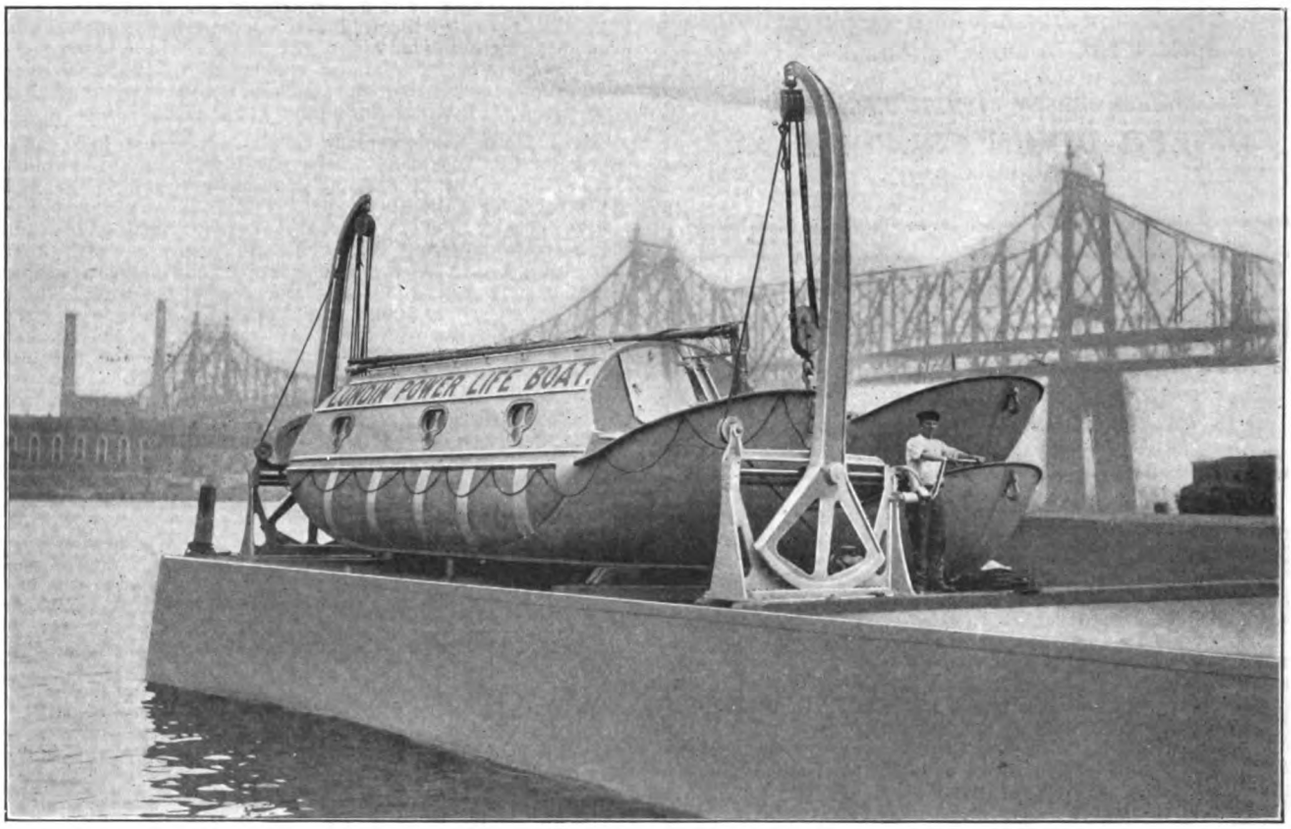
Adopted by the United States Army Transport Service

This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to-day.



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Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

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Mechanically directed firing Bonner automatic timers and indicators, which are stated to be adaptable to all hand-fired boiler plants, afloat or ashore, are described in a circular issued by the Timed Impulse Machinery Corporation, 30 Church street, New York. "The 'System Bonner' is founded upon practical experience and constant investigation of the whole subject of boiler and furnace management extending over a period of more than twenty-five years."

A new hatch cover has been placed on the market by Capt. Arthur N. McGray, 119 West Seventy-first street, New York. This hatch cover is described in a circular published by Capt. McGray, who claims that the cover, which he calls "The Underwriter," cannot be ripped up or broken down by the sea. It is said to be applicable to all ships, to operate without tackle or winches, and to be so easily operated that six seamen can with ease trundle thirty of the hatch-cover sections into place and securely batten them in half an hour.

The original Ewart detachable link-belt and sprocket wheels is the subject of Section A, Catalogue 110, just issued by the Link-Belt Company, Chicago, Ill. "Detachable link-belt was invented by William D. Ewart in 1873, and from that time the original has been manufactured solely by the Ewart works of this company. We were the first to introduce detachable link-belt to the public, and are to-day its largest manufacturers. We offer the widest variety and the most extensive available stock. Our product always has been and is to-day recognized as the standard."

"Lesoyl" is the subject of a pamphlet just published by the Lumen Bearing Company, Buffalo, N. Y. Lesoyl is used to improve lubrication on all bearing surfaces, such as gear boxes, differentials, electric motors, steam engines, pumps, compressors, turbines, water-wheels, blowers, hoist, traveling cranes, rolling mill machinery, etc. "Lesoyl is a semi-fluid concentrate containing graphite, especially prepared to insure the perpetual suspension of the graphite when mixed with lubricating oil or grease. The ingredients are manufactured to our specifications and are compounded in our own machines under the supervision of our chemist. Lesoyl is invariably uniform. Lesoyl, mixed with lubricating oil or grease (in the proportion stated on the label of each can), increases the efficiency and improves the lubricating qualities of all oils and greases."

Dixon's graphite cup grease is described in Booklet No. 75, published by the Joseph Dixon Crucible Company, Jersey City, N. J. The manufacturer states that this grease is absolutely preventive of hot, dry, binding, wearing bearings. "It is used like any other cup grease—but there's a big difference in the results." A sample will be sent free upon request to any of our readers.

"Bound Brook" bushings, made by the Graphite Lubricating Company, Church and John streets, Bound Brook, N. J., are a combination of graphite and bronze, put together by a special process, and warranted by the manufacturer to be perfectly self-lubricating. "We claim much for Bound Brook bushings, and stand ready to back up our claims." A catalogue describing these bushings will be sent free to anyone who asks for it.

Locomotive cranes for unloading and loading vessels are described in Catalogue I, published by the Brown Hoisting Machinery Company, Cleveland, Ohio. Any material is handled, whether in bulk, boxes, barrels, crates, bars or sheets, as "Brownhoist" locomotive cranes can be worked with either grab-bucket, hook, block or lifting magnet. The change from one to the other is easily and quickly made.

"Smooth-On Instruction Book No. 7" has just been published by the Smooth-On Manufacturing Company, Jersey City, N. J. A copy will be sent to any of our readers upon request. This booklet is devoted to the subject of stopping leaks in concrete, brick or stone work, waterproofing, dust-proofing, oil-proofing, etc. For stopping leaks of steam, water, fire or oil in iron and steel send for "Smooth-On Instruction Book No. 15."

The O. K. speed reducer is described in Bulletin No. 4 published by the D. O. James Manufacturing Company, 1120 West Monroe street, Chicago, Ill. "Motor uses have long recognized the desirability of a drive with which power could be taken from the motor without the usual one-sided strain caused by the use of the ordinary gear and pinion, pulleys and belts, sprockets and chains. O. K. speed reducing transmissions relieve the motor of this one-sided strain and allow it to run under most favorable conditions."

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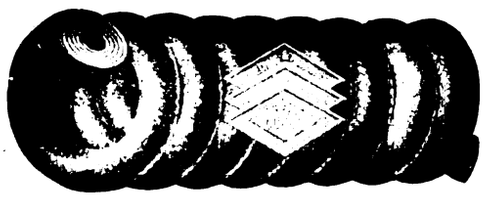
It has stood the test of years and not found wanting



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WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

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Accidents resulting from the use of projecting set screws are stated by the J. H. Williams & Company, 63 Richard street, Brooklyn, N. Y., to be prevented by the use of the "Vulcan" safety dog lathe. These lathes are described in a catalogue the company has just issued. This catalogue states that the safety feature of the "Vulcan" safety dog lathe is not subject to adjustment that may be forgotten.

Metallic packings are described in a catalogue just published by the Holmes Metallic Packing Company, Wilkes-Barre, Pa. "A few reasons why the Holmes Patent Improved Metallic Piston Rod and Valve Stem Packing is the best: 1. Made in the very best manner that good workmanship can produce. 2. Made of the best material for purposes of wearing and anti-friction qualities. 3. Less friction on the rod and stem than any other packing made. 4. Will not wear the rod out of round or uneven, score or scratch the rod. 5. Saves oil, for we do not require the rod to be deluged with oil. 6. When once packed good for three years. 7. Saves the eternal and everlasting buying of steam packing. Equally good for steam pumps, and for air compressors cannot be excelled. We have said enough; try it for yourselves. We ask no one to pay for it until they have tried it."

Electric service on board ship is the subject of Bulletin 4926, published by the General Electric Company, Schenectady, N. Y. Among the electric devices manufactured by the General Electric Company are the following: Edison Mazda Lamps, in all sizes, are especially adapted for lighting any part of the boat. G-E electric fans and electric stateroom heaters provide comforts. The G-E marine searchlight increases the scenic advantages as well as the safety at night. Electric cooking and heating devices of all kinds can be operated at a cost incomparable with the convenience and simplicity. Power motors for the windlass, pumps, etc., can be located conveniently and operated by the turn of a switch. The source of power most economical and convenient for yachts and motor boats is the G-E gasolene engine generator—a thoroughly reliable direct-connected unit which operates successfully with minimum attention. For vessels having steam, the G-E steam engine generator or turbine may be used.

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The Severity of Winter Weather at Sea as Revealed by the Camera. Illustrated
Letters From Practical Marine Engineers:
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Wire Rings for Leaky Stuffing Boxes. Illustrated.
Repairing a Cracked Cylinder. Illustrated.
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MAY, 1914

Largest Oil Tankers in the United States. Illustrated.
Motor Ship Kronprins Gustaf Adolf. Illustrated.
Measurement of Strains in a Ship's Hull. Illustrated.
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The Rational Non-Diesel Marine Oil Engine.
Further Experiments Upon Wake and Thrust Deduction.
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Electric Towing Locomotives For Panama Canal Locks.
Oil Tank Steamer Frank H. Buck. Illustrated.
Tests of Lundin Power Lifeboats. Illustrated.
Chinese Junk Ning-Po. Illustrated.
Convention For the Safety of Life at Sea.
The New Allan Liner Calgarian. Illustrated.
The Watertight Subdivision of Ships and the Effect of Bilging.—I. Illustrated
Letters From Practical Marine Engineers:
Repairs to a Broken Eccentric at Sea. Illustrated.
Corrosion of Boilers Through the Use of Sulphurous Oils.
Serious Accident Due to Shortness of Water. Illustrated.
Securing a Loose Piston.
Friction.

JUNE, 1914

Difficult Dredging Operations at Bermuda. Illustrated.
Gasolene (Petrol) Motor Bucket Dredger. Illustrated.
A Simons Suction Hopper Dredger Fitted With Special Sand Trapping Apparatus. Illustrated.
Fifteen-Inch Hydraulic Dredge For Barge Canal Work. Illustrated.
An Electric Suction Dredge For Canal Work. Illustrated.
Powerful Bucket Dredgers Built in Canada. Illustrated.
Two New Dipper Dredgers at Panama. Illustrated.
Powerful Bucket and Suction Dredgers For Russia. Illustrated.
Bucket Ladder Dredger William H. Raeburn. Illustrated.
Sea-Going Hopper and Suction Dredger. Illustrated.
Large Electrically-Operated Gold Dredge. Illustrated.
Digging Hard-Pan with a Hydraulic Dredge. Illustrated.
Trials of a Unique Drag Suction Dredger. Illustrated.
A Sea-going Twin-screw Barge-Emptying and Suction-Loading Dredger for Tientsin, China. Illustrated.
The Powerful Rock Lifting Dredger Cowpen. Illustrated.
A New Hydraulic Dredge For River Work in Cleveland. Illustrated.
Twenty-Inch Electric Dredge St. Louis.
Four-Cubic Yard Dipper Dredge Kewaunee. Illustrated.
American-Ball Four Cylinder Triple Expansion Dredge Engine. Illustrated.
Priestman Grab Dredger. Illustrated.
The Westinghouse Marine Steam Turbine. Illustrated.
The New Hamburg-American Liner Vaterland. Illustrated.
The Rational Non-Diesel Marine Oil Engine.
The Watertight Subdivision of Ships and the Effect of Bilging—II. Illustrated.
Letters From Practical Marine Engineers:
A Condenser Breakdown. Illustrated.
Further Remarks on the Corrosion of Boilers Using Sulphurous Oils.
Successful Arrangement of Piston Rings on Horizontal Marine Engines.
Air Pumps.
The Loss of the Oklahoma as Viewed by the Bureau Veritas.
An Interesting Boiler Repair. Illustrated.
Marine Engineering Academy.

JULY, 1914

The New Cunard Express Liner Aquitania. Illustrated.
Steamships President and Governor Changed to Oil Burners.
The Submarine Tender Fulton. Illustrated.
The Empress of Ireland Disaster. Illustrated.
New Steamship Piers at Boston. Illustrated.
Honolulu Floating Dry Dock. Illustrated.
Westinghouse Turbine Reduction Gear. Illustrated.
The British Board of Trade Experimental Bulkhead Tank. Illustrated.
Motor-Driven Tank Vessel Avon. Illustrated.
How Marine Engineers Can Make Money.—I. Illustrated.
The Rational Non-Diesel Marine Oil Engine.
Care of the Electric Plant on Board Ship. Illustrated.
Watertight Subdivision of Ships and the Effect of Bilging.—III. Illustrated.
Gatun Hydroelectric Development for the Panama Canal.
The Passing of the Clipper Stem. Illustrated.
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A patented automatic ship's bell clock outfit is described in a circular published by the Chelsea Clock Company, 16 State street, Boston, Mass. "On yachts the small 'Chelsea' ship's bell clock may be located in the cabin, pilot house, etc., and operates the big bell (sizes are 5¾ inches, 6¾ inches, 8½ inches and 10¼ inches) located forward outside. In case of fog, etc., by special push button, the bell may be rung continuously, and, as at night, if so desired, the striking on big bell may be omitted. In steamship offices and specialty stores, etc., the clock may be in the office and the bell may be located over the outside door, etc."

"You can reface the valves in your pumps without dismantling" is the statement made regarding the Dexter pump valve reseating machine in Catalogue I-16, published by the Leavitt Machine Company, Orange, Mass. "The new Dexter pump valve reseating machine can be quickly and easily attached for recutting the seats in the water valve chamber in all types of duplex, triplex and single-cylinder plunger, boiler feed, feed-water, underwriter, mine and general service pumps. The valve seat is accurately recut in a few minutes' time, making an absolutely tight valve that will add greatly to the efficiency of your pumps. The saving of power alone will quickly pay for the outfit. These outfits are the result of over twenty years' experience of valve reseating specialists, and are the greatest of all successful tools we have designed for reseating valves."

"Steel Pressure Blowers" is the title of an illustrated circular, 172-O, published by the B. F. Sturtevant Company, Hyde Park, Boston, Mass. The Sturtevant Company has received the following letter from F. N. Peter & Bro., Newside, Pa.: "In the year '78 we started our foundry and installed a Sturtevant blower, and used it constantly until 1901, when our plant was completely destroyed by fire, and, strange to say, up to that time we positively did not spend a cent for repairs, and there was no play in the bearings whatsoever. When we rebuilt the plant in 1902, we again installed the same kind of a blower, and up to the very day and down to this minute we have done nothing to the blower but oiled it. And we are most proud to say that it is in better condition than it was when we received it. Long may the Sturtevant blower live, thrive and prosper."

Thermometers for every purpose are described in a catalogue published by the H. & M. Division of the Taylor Instrument Companies, 843 West avenue, Rochester, N. Y. The company requests correspondence from parties, giving complete details of requirements, so that they can quote intelligently on instruments suitable for each particular purpose.

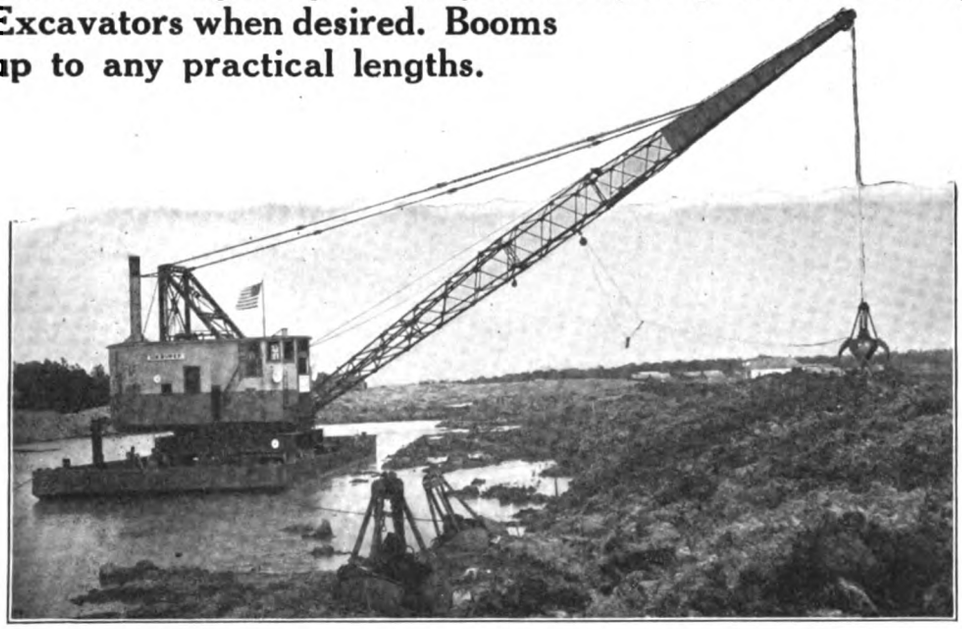
A copy of the "Eckliff Booklet" will be sent free to any of our readers who will write to the Eckliff Automatic Boiler Circulator Company, 46 Shelby street, Detroit, Mich. The use of the Eckliff circulator in marine boilers is stated to create and maintain perfect circulation; to increase efficiency and lengthen the life of boilers. Absolute proof of these claims is said to be given in the Eckliff booklet.

High-pressure coverings are described in a handsomely printed and illustrated book of 72 pages published by the Insulation Department of the Armstrong Cork Company, Pittsburg, Pa "Compared with the coverings heretofore in general use, Nonpareil high-pressure coverings are more efficient non-conductors of heat, will withstand temperatures at which the older coverings will calcine and disintegrate, possess much greater moisture-resisting power, are just as easy to apply and are equally reasonable in first cost. These points are considered, in the order mentioned, in the sections following."

A very completely illustrated catalogue, consisting of 60 pages, has just been issued by James Rees & Sons Company, Pittsburg, Pa. This company designs and builds iron and steel freight and passenger steamers, tugboats, dredge boats, towboats and barges for inland waters; also marine and land engines and boilers of every type and size. The company makes a specialty of light draft river steamers of every description, and states that it is the pioneer of knocked-down galvanized steel hull watertight compartment and composite steamers for foreign trade. These steamers use either high-pressure or compound condensing engines of any type desired. "Our records show that during the existence of this firm, stern-wheel and side-wheel steamers, transfer boats, tugboats, ferry-boats, towboats and launches, gunboats, sand diggers, barges, and every conceivable type of water craft have been constructed for lakes and rivers in Alaska, Africa, Brazil, Canada, Central America, Cuba, Mexico, Mongolia, Russia, Siberia, South Africa, and the inland waters of the United States, to the number of 601."

FOR LAND OR SEA

Bucket Dredges up to 15 yards capacity suitable to operate Drag Scraper Excavators when desired. Booms up to any practical lengths.



Traveling Locomotive Crane with 110′ boom, 3 yard Orange Peel Bucket to operate on Land or from scow, built for Mississippi Levee Board, New Orleans.

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Steel towers and tanks—boats for every purpose—sand and gravel tanks, etc., are described in a catalogue issued by the Rock Island Bridge & Iron Works, Rock Island, Ill. "The catalogue we present you herewith illustrates and describes some of the iron and steel structural work we have produced. The diversity of the output represented by these samples, proves our ability to undertake and carry to successful conclusion everything in iron and steel construction, ranging from from the smallest device of any description to complete iron and steel construction for the largest buildings. We would emphasize the following: Steel towers and tanks; structural steel, sand and gravel bins; boats for every purpose; fire escapes; ornamental iron; derricks, etc."

"The Prevention of Collisions at Sea—How the Problem has Been Solved," is the title of Bulletin No. 43 issued by the Submarine Signal Company, Boston, Mass. "The four recent collisions, first the *Monroe* and the *Nantucket*, in which forty-one lives were lost, then the *Empress of Ireland* and the *Storstadt*, in which over 1,000 lives were lost, then that of the *New York* with the *Pretoria*, and the *Kaiser Wilhelm II* with the *Incemore*, have again brought out in high relief the fact that the greatest danger at sea is collision, the one danger against which it has hitherto been impossible to take effective precaution. As our readers know, the Submarine Signal Company has for years been experimenting to secure a device which would prevent collision in thick weather. This has now been accomplished. Ships equipped with the submarine telegraph oscillator can warn each other of their approach, determine their relative positions and communicate in Morse code."

Electric winches and winding drums are described in Bulletin 48901, just issued by the Sprague Electric Works, 529 West Thirty-fourth street, New York. "These machines are designed for all kinds of hauling, usually in a horizontal direction, and at comparatively slow speeds. One of the most frequent uses is for pulling cars. All manufacturers having sidings need to move cars, and sometimes it is even necessary to switch them. The pinch-bar method is slow, and on curves or slight grades it fails entirely. The service of a switch engine is expensive, and the engine is not always available. The self-contained, weather-proof winch solves the problem, because it may be located at a convenient point, and either by direct pull, or with the aid of a snatch-block, it can move the cars when and where desired. This machine has also been used with great success for helping teams up grades, for pulling heavy trucks into and out of shops, in drawing heavy articles on and off drays, in warping vessels through draw bridges and alsong docks, or for dragging heavy material along the ground in stone quarries, lumber yards, ship yards, etc."

The Pneumercator is described in a catalogue published by the Pneumercator Company, 118 Liberty street, New York. "The Pneumercator is a new, scientific, practical and accurate apparatus, which registers the depth, height or volume of any liquid or semi-liquid that will seek its own level. It is made in various types, of which Models D-1 and T-1 are here described. Model D-1 is guaranteed to measure the forward and aft draft of a vessel to within 1 inch and to register the mean draft and the corresponding tonnage displacement to the same degree of accuracy, in either salt or fresh water, or interchangeably. It also shows the trim and list of the vessel under all conditions. It weighs and measures bulk cargoes, such as coal, ore, grain, lumber, molasses, oil, etc. It also weighs and measures bunkers of either coal or oil and will, at the same time, give a check on the consumption of same. This model is also of the greatest value as a navigating instrument, as the trim and draft of the vessel can be ascertained at all times. In case of accident, due to collision or grounding, the pneumercator will instantly give warning if the ship is leaking badly, and after the pumps are started will also show whether they are controlling the leak or not. Model T-1 measures and indicates the depth, height and volume of any liquid or semi-liquid in tanks, reservoirs, dry docks, etc., its uses in such work being practically unlimited. The instrument may be placed anywhere."

BUSINESS NOTES

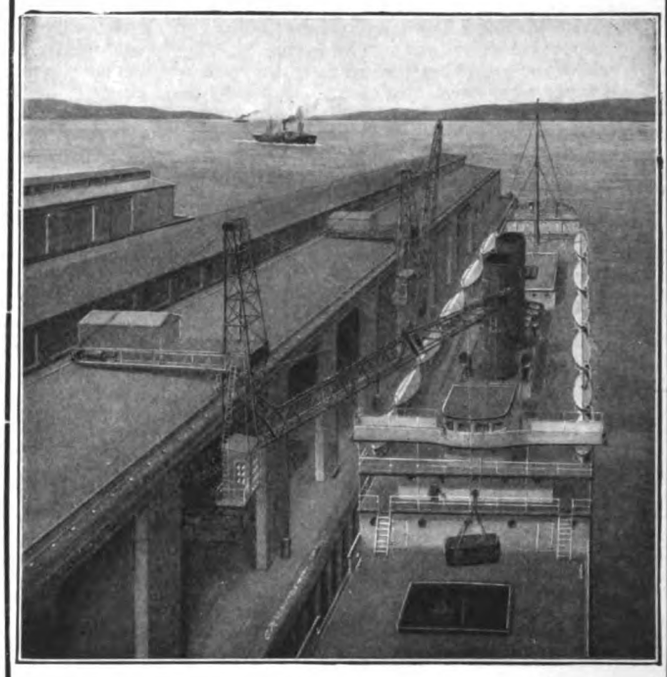
AMERICA

THE NORDBERG MANUFACTURING COMPANY, Milwaukee, Wis., writes INTERNATIONAL MARINE ENGINEERING that it is now building Diesel engines of the largest size, having recently entered into an exclusive manufacturing arrangement with Usines Carels Freres, of Belgium.

THE SHAW

Electric Wharf Crane

Reduces Handling Costs---Saves Time



The Shaw Electric Wharf Crane travels along **the roof** of the pier shed and offers no obstruction on the deck area.

Freight is delivered to and taken from the **inside of the pier shed** eliminating inefficient rehandling.

The crane transfers the freight between the hatch and the pier in a straight line, which is obviously **the most direct route.**

On account of the straight line hoist and transfer, comparatively **high speeds** are practicable.

Exposure of freight to the weather is reduced to the absolute minimum.

Breakage is practically eliminated due to the perfect control of all motions by the one operator in the cab.

Manning, Maxwell & Moore, Inc.

Shaw Electric Crane Co., Dept.

119 W. 40th Street, New York

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Terry Turbine Company Lands Large Order.—A year ago last June the Terry Steam Turbine Company, Hartford, Conn., received an order for nineteen turbines for the Italian navy, the last of which are almost ready for shipment. The success of the first installations resulted in their receiving an order for eight more in May, and now they are just starting work on an order for twenty-four additional received from Messrs. N. Odero & Company, Sestri Ponente, Italy. In addition to these they have also recently received a large number of orders for use in the United States, Canada, Cuba, Mexico and South America, one of which covers twenty turbines for the new generating station of the Philadelphia Electric Company. To properly take care of this large amount of business they have installed new machine tools, increasing the capacity of their plant by about 25 percent, and are now employing on full time a larger number of men than heretofore. At the present rate of production it would take about four to five months to complete the orders now on hand.

Marine Refrigeration.—Since last reported the Brunswick Refrigerating Company, New Brunswick, N. J., has sold two 4-ton plants to the Maryland Steel Company, to be installed on the new Panama Canal colliers *Achilles* and *Ulysses*, now being built by the Maryland Steel Company. Brunswick machines are also installed on the navy colliers *Neptune*, *Orion*, *Jason*, *Proteus* and *Nereus*. The steamship *Energie*, of the National Railways of Mexico, was equipped with a 1-ton plant for ship's stores and water cooler. The New York & Cuba Mail Steamship Company purchased a 2-ton plant for ship's stores for the steamship *Matanzas*. This makes the seventh boat which these people have equipped with Brunswick apparatus in less than nine months. The Luckenbach Steamship Company purchased two ½-ton plants, a duplicate unit for the steamship *Harry Luckenbach*, and a few days later purchased a 1-ton plant for the steamship *J. L. Luckenbach*. This makes nine plants which the Luckenbach Company have purchased from the Brunswick Company. There are now 186 boats equipped with a total of 220 Brunswick plants. Of this number 55.6 percent are re-orders, and of the re-orders 43.3 percent are companies having four or more plants. The Brunswick Company have lately issued a new marine list of users, and will be very glad to send a copy of this and a copy of their new bulletin No. 101, telling of their machinery, to anyone who is interested.

The Independent Pneumatic Tool Company, Chicago and New York, has leased the two-story building at No. 334 St. James street, Montreal, Quebec, and has arranged to open a branch store, where their Canadian business will be transacted after August 9. A complete line of "Thor" pneumatic tools, electric drills, accessories and spare parts will be carried in stock for immediate delivery on orders in Canada, and "Thor" users will receive service direct from the company in the future. Mr. W. H. Rosevear, who has been prominent for years in the railway supply and machine tool business in Canada, has been engaged as manager, and is now in Montreal.

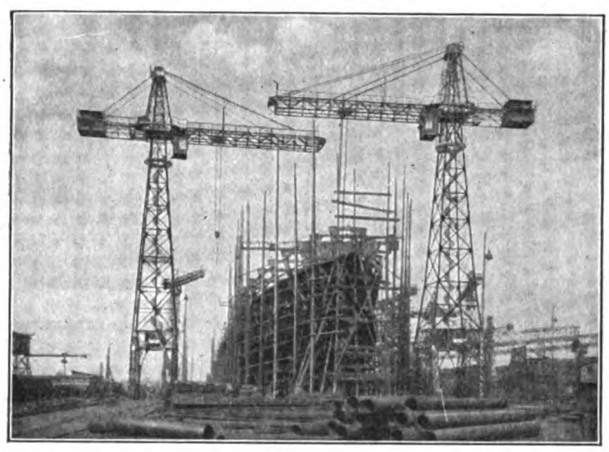
TRADE PUBLICATIONS

GREAT BRITAIN

The Allen open-type engine is the subject of Section C, Catalogue 14, published by W. H. Allen, Son & Company, Ltd., Queens Engineering Works, Bedford. One of the illustrations in this book shows a single-cylinder, open engine and continuous-current dynamo suitable for ship work.

"Electricity in the Home and Workshop" is the title of a 222-page illustrated, cloth-bound catalogue published by the AEG Electric Company, Ltd., 133 Oxford street W., London. "Modern industry is successfully engaged in meeting the demands constantly made for improved comfort, cleanliness and hygienic conditions in everyday life. A large part of this task has fallen to electrical engineering. It has provided us with a great number of devices for the manifold application of electric current, and we are thus able to obtain valuable service from electricity as a source of light, heat and motive power. Notwithstanding its great advantages, however, the use of electricity has not yet become universal; a large section of the public is still ignorant of the great benefits which can be secured from its employment. Even in places where electric current can be obtained cheaply and easily its extensive adoption is frequently opposed by ignorance and prejudice. The object of the present list, therefore, is to describe some of the principal electrical apparatus for domestic and industrial use and draw attention to its advantages."

DEMAG



The illustration shows 2 travelling cranes of a battery of 12 cranes furnished to Shipyard Weser at Bremen. Capacity 8.25 tons at 33 feet and 4.4 tons at 65 feet Radius.

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Fixed or travelling on level or inclined track for comparatively narrow gauge.
For any height, outreach and capacity.
Trolleys running on revolving jib.
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Double helical gearing for machine tool drives is the subject of List No. 9, published by the Power Plant Company, Ltd., West Drayton, Middlesex. "The two outstanding features of modern machine shops are the universal use of high-speed tool steel and the adoption—rapidly increasing—of all-geared machines driven direct from individual motors. To obtain the full benefit of high-speed steel, powerful tools must be used, but, even so, if high-class work is to be turned out, it is essential that the power is transmitted to the working spindle evenly, and this can best be done through accurately cut double helical gearing, giving the continuous engagement so necessary to prevent vibration and chatter. Our double helical gearing, cut on our patent gear-cutting machines, is particularly well adapted for the purpose."

The "Conqueror" Surface Condensing Equipment is the subject of Catalogue No. 4, Section B, issued by W. H. Allen, Son & Company, Ltd., Queens Engineering Works, Bedford. "The condenser is of the Allen patent 'Conqueror' high-efficiency counter-current type. The condenser casing is of cast iron, cylindrical in form, fitted with suitable branches to take the main exhaust, the air pump suction and circulating water inlet and outlet. The tube plates are of the best rolled brass, 1 inch thick, and all tubes are of solid drawn brass, .75-inch exteral diameter by 18 I. W. G. (.048 inch) thick. The tubes are fixed in the tube plates by means of screwed ferrules and tape packing at both ends, the ferrules being provided with lips to prevent the tubes from creeping out of place. The water heads of the condenser are divided by diaphragms, so that the water passes through the tubes a suitable number of times to give the most efficient velocity in the tubes, the water first passing through the lower portion of the condenser, thence through the upper half to the discharge outlet at the top of the condenser. The condenser is tested both inside and outside the tube plates to a pressure of 30 pounds on the square inch. When the condenser is supplied with the 'Allen" system of submerged tubes, arranged in the lower part of the condenser, a few of the tubes are removed to accommodate the weirs. By the fitting of this patent arrangement a higher vacuum is obtained, and the minimum quantity of circulating water is required per pound of steam condensed. In some cases it is advisable to construct the casings of large condensers of wrought steel, and it is therefore necessary that the choice of the material of which the condenser casing should be made be left to our discretion."

"Wireless Telegraphy for Ships" is the subject of Pamphlet A-550, issued by Siemens Bros. & Company, Ltd., Woolwich, London, S. E. "A wireless telegraph apparatus is now recognized as an essential part of the equipment of every passenger vessel, and is becoming more and more necessary even on cargo vessels. Official recognition of the necessity of a wireless service for merchant vessels is evidenced by the present, or forthcoming, regulations of all civilized governments for compulsory installation. The most important recommendations of the Official Committee for Safety of Life at Sea, 1914, are given upon page 19. The advantages to the shipowner resulting from the installation of an up-to-date wireless telegraph equipment are so many and so obvious that it is only necessary to mention some of the most important. (1) Safety of passengers and crew. An efficient wireless telegraph installation may not only be the means, as has frequently occurred in the past, of saving the lives of passengers and crew and possibly the vessel after a disaster has occurred, but it is often the means of preventing such accidents by enabling the captain to receive warnings of approaching storms, fogs, or of the locality of derelicts or icebergs from other vessels or coast stations. The preference which intending passengers have for a vessel with an efficient wireless telegraph installation greatly facilitates the booking of full complements. (2) Saving of time in port. By enabling the approximate time of arrival of a vessel in port to be notified thirty-six hours or more beforehand, wireless apparatus frequently enables much time to be saved, as coal and other stores can be ready and waiting to be shipped when the vessel reaches its berth. This is of great importance when vessels arrive at a port immediately before a Sunday or holiday. In the case of vessels carrying certain classes of cargo, it is sometimes of great advantage if the owners can convey instructions to the master of the vessel as to the port to which he is to proceed to discharge or take up cargo. If vessels are fitted with wireless telegraph apparatus, such instructions can be sent to the master so as to reach him in good time to enable him to act upon them without any time being lost owing to his having to change the vessel's course. (3) Calibration of chronometers. Already a large number of coast stations maintain a regular time signal service, which enables all ships equipped with wireless telegraph appartus within the range of the transmitting station to adjust their chronometers to correct Greenwich time. This service will in the future be undoubtedly very much extended,

Westinghouse Turbines, Reduction Gears and Auxiliaries

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of highest efficiency and reliability resulting from 19 years of experience; over 3,000,000 hp. built and building.

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of small and large power for propelling units and auxiliary drives. Over 95,000 hp. built. Cruising gears for two U. S. Battleships building.

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of small and large power for propelling vessels of all classes and for auxiliary drive. The most efficient propelling unit built.

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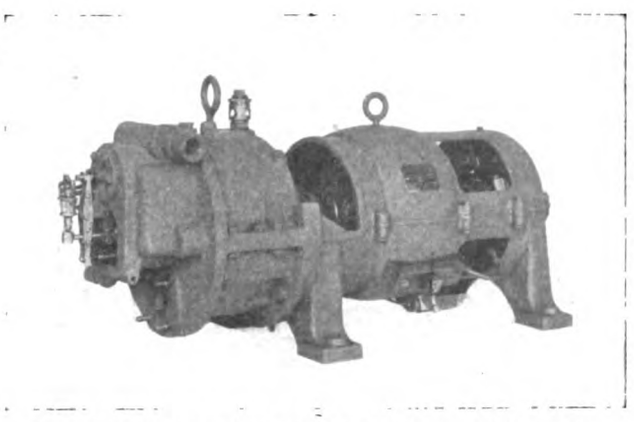
built in sizes from 1 kw. up—both direct-connected and gear driven. These units are simple, reliable and very efficient.

BRIDGE CONTROL
for operating main turbine from bridge. Instantaneous operation, avoids confusion and accidents. Found satisfactory in test by Navy Department



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A very compact and reliable unit

CONDENSING PLANTS
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High efficiency air, circulating and condensate pumps. Westinghouse-Leblanc Air Pump produces highest obtainable vacuum. No loss of fresh water.

CENTRIFUGAL PUMPS
of all sizes for high and low pressure service. Boiler-feed and fire pumps; turbine or motor driven. These pumps are simple and rugged and very reliable.

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TRADE PUBLICATIONS.

AMERICA

A spirally corrugated film feed heater is described in Catalogue 10-F, published by Schutte & Körting Company, Twelfth and Tompson streets, Philadelphia, Pa. "The prime feature of this heater is the concentric spirally corrugated tubes. This construction, besides constantly agitating the water, and so preventing the formation of cold cores, keeps the water in a thin film between the two heated copper surfaces. This gives an exceedingly high rate of heat transmission—far exceeding anything that has ever been accomplished. Not only does the heater save weight and space by its greater heat transmission per square foot, but by inserting one tube inside the other we get almost two square feet to the one in the same space where the tubes are single. Line cut opposite illustrates exactly the comparative saving in space."

"The Eckliff Automatic Circular for Marine Boilers" is the title of an illustrated 24-page pamphlet just published by the Eckliff Automatic Boiler Circulator Company, 46 Shelby street, Detroit, Mich. "Something happened in the spring of 1910 that means more to marine engineers than any other innovation of recent years. That 'something' was the installation of the first Eckliff circulators in the 13-foot by 13-foot three-furnace Scotch boiler of the steamer *Pentland*. This vessel is now owned by the Pentland Steamship Company, Cleveland, Ohio. These first Eckliff circulators were crude and their capacity only one-half that we put in the same size boilers to-day. In spite of this, and the fact that the *Pentland's* boiler was sixteen years old when the installation was made, the results were remarkable. After four years of Eckliff service, during which time no major repairs were necessary, the boiler was opened and rigidly inspected by Government inspectors. Not a trace of scale was found on tubes, furnaces of combustion chamber. The boiler was in better condition in every way than when installation was made—the circulators showed absolutely no signs of wear—and the inspectors declared the boiler was good for at least ten more years. This *Pentland* installation and every one of the many we have since made have proved beyond dispute that the Eckliff is the one circulator whose principle of operation is scientifically correct, and the one circulator which creates and maintains perfect circulation in internally-fired boilers."

"Nevasplit," a non-inflammable material for wainscoting, deck panels, bulkheads, door panels and sheathing generally, is the subject of a catalogue published by the Keyes Products Company, 71 West Twenty-third street, New York.

use on board ship, are described in a catalogue published by the Simplex Electric Heating Company, Cambridge, Mass. This company "makes everything for heating and cooking by electricity."

"A Study in Graphite" is the title of booklet No. 75, published by The Joseph Dixon Crucible Company, Jersey City, N. J. Speaking of Dixon's flake graphite, this booklet states "hot, scored and binding bearings are never known where this fine natural lubricant is used with oil or grease."

Double disc gate valves are one of the large line of valves described in Catalogue No. 50, published by the Lunkenheimer Company, Cincinnati, Ohio. These valves are made of Lunkenheimer genuine steam bronze in sizes from ¼ to 3 inches, inclusive, for steam working pressures up to 150 pounds per square inch.

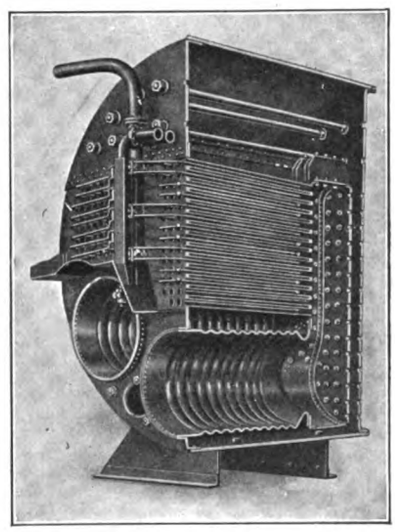
An incline elevator catalogue has been published by the Otis Elevator Company, Eleventh avenue and Twenty-sixth street, New York, and a copy should be in the hands of every one interested in the subject of the economical loading and unloading of freight. Otis inclined elevators are operating at the docks of the Metropolitan Steamship Company in Boston; Detroit & Cleveland Navigation Company, Detroit; Mystic dock, Boston & Maine Railroad, Boston; Old Dominion Steamship Company, New York; Merchants & Miners' Transportation Company, Savannah, and many other places.

"The cheapest marine power on earth" is the statement made by A. L. Galusha & Company, 307 Atlantic avenue, Boston, Mass., for their producer-gas outfits. These will use gas made from coal, coke or charcoal. The company states that this gas is as cheap as gasolene at 2 cents a gallon, and that the expense is one-fourth to one-twelfth the expense of power from steam or oil. A. L. Galusha & Company build sizes from 18 horsepower up, and state that their outfits have been used for years in towboats, freight boats, fishing boats, pleasure boats and other craft. A catalogue completely describing these producer-gas outfits has just been published, and a copy will be sent free to any of our readers upon request.

SCHMIDT FIRE TUBE SUPERHEATER
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

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Terry turbines for marine use are described in Marine Bulletin 16-H-5, published by the Terry Steam Turbine Company, Hartford, Conn.

Westinghouse turbines, reduction gears and auxiliaries for marine service are described in a catalogue issued by the Westinghouse Machine Company, East Pittsburg, Pa. The turbines are stated to be of the highest efficiency and reliability, resulting from nineteen years of experience. Over 3,000,000 horsepower are said to be built or building. The reduction gears are made in large and small powers for propelling units and auxiliary purposes. More than 95,000 horsepower are stated to be built. Among the other machinery for marine use made by the Westinghouse Company are geared turbine units, turbo-generators, bridge controls, condensing plants, condenser pumps, centrifugal pumps and fans, etc.

"The Titan Storage Battery" is the title of an illustrated catalogue of 32 pages published by the Titan Storage Battery Company, Newark, N. J. "We shall issue at frequent intervals interesting and useful data on storage battery practice and applications. The publications are printed on loose leaves and perforated for insertion in the Standard Data Covers of the Society of Automobile Engineers. They will be mailed free of charge to those who ask for them, and to meet the demands for special information, users and prospective users of Titan storage batteries shall receive free advice from our engineers and chemists on all subjects pertaining to the service and operation of our batteries."

Körting condensers are described in Catalogue 5, published by Schutte & Körting Company, Twelfth and Tompson streets, Philadelphia, Pa. "For the most economical use of fuel in steam plants it is essential to obtain a greater expansion of the steam in the engine cylinder or turbine wheel case. To accompany this it is necessary to produce a vacuum into which the steam is exhausted after it has performed its work in the steam cylinders or turbine wheel case. To produce this vacuum a steam condenser is necessary. Various types of condensers are built, but the Körting jet condensers are the simplest and most reliable. The Körting jet condensers work on the principle of jet apparatus; that is, water under a certain pressure passes through a specially designed nozzle, or nozzles, whereby the pressure is transferred to velocity, thence through a device called combining tube, provided with a series of holes drilled obliquely, in which it comes in contact with the exhaust steam from the engine or turbine (which it condenses) and the non-condensible gases mingled with the water. By thus condensing the steam a vacuum is created, and the water jet, on account of its high velocity, acts at the same time as the pump to handle the non-condensible gases and maintain the vacuum. In the lower part of the condenser (or tail pipe) the velocity of the water is again transferred into pressure in order to overcome the atmospheric pressure. The tail pipe is always completely filled with water to prevent air from entering the body of condenser. The water nozzles and the tail pipe are so designed as to obtain the required results."

The Harris valveless oil engine is described in a handsomely printed and illustrated pamphlet just published by the Harris Patents Co., 328 Chestnut street, Philadelphia, Pa. This engine is said to be especially suitable for marine use. The pamphlet states that it is the only internal-combustion engine which will start with a load on like a steam engine. The advantages of the Harris valveless engine, as applied to tugs (it is said to be applicable for all marine purposes), are as follows, according to the manufacturer: In the case of a steam tug whose crew can only work 13 hours a day, the vessel lies at the wharf 11 hours with banked fires, while the crew sleeps, and perhaps several hours more awaiting orders. She requires coaling, say, once a week, which necessitates a considerable loss of time with the steam up, and the crew have to consider this time as part of their allowable 13 hours unless done by a reserve crew at night. These same tugs have to carry tons of fresh water for use while in salt water. This means not only the difference in their trim when they go out and when they return, but it is many tons to be pumped in and carried for nothing. "The same tug with a Harris valveless engine could lie at the wharf night and day with absolutely no cost for fuel. In ten seconds she can be away from the wharf at full speed. With the Harris valveless engine she can increase her actual power by using the step pistons under air pressure in reversing and starting a heavy tow. She will require to take in fuel only once in about three or four months against every week when coaling." The advantages of Harris valveless engines for use on lightships, passenger ships, ice patrols, battleships and submarines, auxiliary vessels, etc., are also entered into in detail.

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It registers any speed without heating of parts. Equally good for motors, gas engines, line shafting or any revolving machine-part. Rubber tips for centered or pointed shafts. Get the Starrett Catalog No. 20L. It shows other tools for the engineer.

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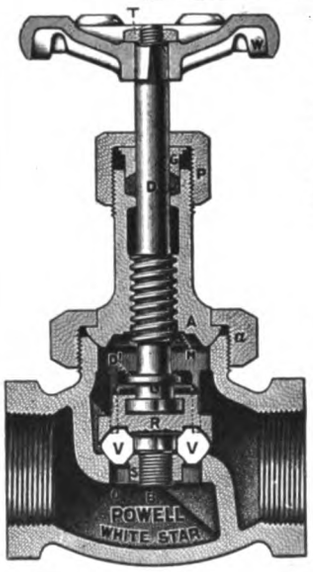

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TRADE PUBLICATIONS

GREAT BRITAIN

"The Saver Friction Clutch Pulley" is the subject of a catalogue published by the Saver Clutch Company, Ltd., Moss Lane, Altringham. "To obtain the most suitable clutch for any particular duty it ought to be borne in mind that if the clutch has to start up with a dead load the size should be increased beyond the ordinary one required for a running load. It means economy if the clutch is well up to its duty. We have supplied clutches for driving all classes of machinery in the mechanical, textile, electric and other trades, as well as submarines and battleships for British and foreign governments, and all classes of motor vehicles. This varied experience has enabled us to produce a clutch with the fewest possible parts, yet having the highest standard of efficiency, and so simple in its construction that anyone with an elementary knowledge of mechanics can understand its working and adjustment.

Ramsay's patent marine governor is described in a 10-page catalogue issued by Ramsay's Marine Engineering Company, Ltd., 19 and 21 Trundleys Road, Deptford, London, S. E. "Many atempts have been made in the past to devise a marine engine governor which, while being effective in governing capacity under all conditions of working, shall at the same time be absolutely certain of action, but success has not hitherto crowned those efforts. If a governor is to engender confidence in those responsible for the working of the engines and the safety of the ship, so far as its propulsive functions are concerned, it must have the merit of being capable of working without the least risk of derangement from causes likely to arise under ordinary working conditions. It is claimed that the Ramsay governor complies with those conditions to the full, and after a study of the operation of working, this fact will be admitted by all those competent to judge by the light of actual practical experience."

Brass and copper tubes are described in a circular published by the Yorkshire Copper Works, Ltd., Leeds, England. "The copper works at Leeds, covering an area of 20 acres on the company's own estate of about 120 acres, were founded a quarter of a century ago. The works are the largest in this country solely devoted to the manufacture of copper and brass tubes, and probably are the largest of their kind in the world. They are by far the most modern and up-to-date, and are driven entirely by electricity from the company's own power station, an interior view of which appears at the foot of this page. The works are fitted with powerful draw-benches and the most modern plant for the production of copper and brass tubes for all purposes. A notable feature of the works is the great piercing machine and its accessory plant of which the company possesses the sole patent rights for Great Britain. Every copper tube turned out of these works is made from shells pierced from solid cast cylindrical billets. Copper tubes made by this process are unequaled, and are especially suitable for locomotive, marine and general engineering purposes. Brass tubes of various alloys are made from hollow cast shells, special attention being paid to secure homogeneous castings capable of withstanding the severest mechanical tests. A large proportion of the output of the works consists of condenser tubes, which are supplied to all the leading shipbuilders in this and other countries, and also to the great power stations."

TALBOT

BOILERS

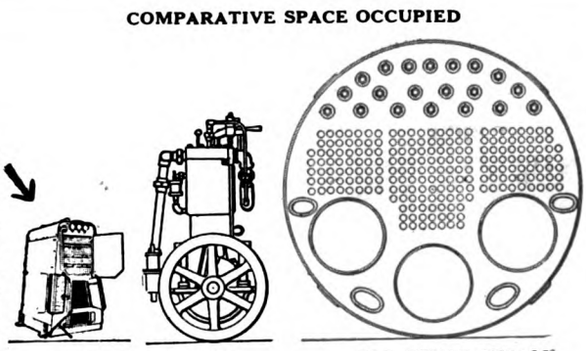
are used by one of the largest users of Marine Engines in the world.

One of the Talbot Boilers installed in a launch owned by this organization has run 40,000 miles without requiring repairs of any description. The Talbot Boiler occupies one-quarter of the cubic feet space occupied by the boiler previously installed and weighs one-fifth as much. The fuel and lubricating cost of 100 H. P. Talbot Plant is 29 cts. per hour.

Send for Full Description

The TALBOT BOILER CO., 120 LIBERTY ST. NEW YORK CITY

COMPARATIVE SPACE OCCUPIED



TALBOT **GAS** **OLD STYLE STEAM**

Talbot Boiler Tube can be removed and the Boiler under *full* steam again in 15 minutes

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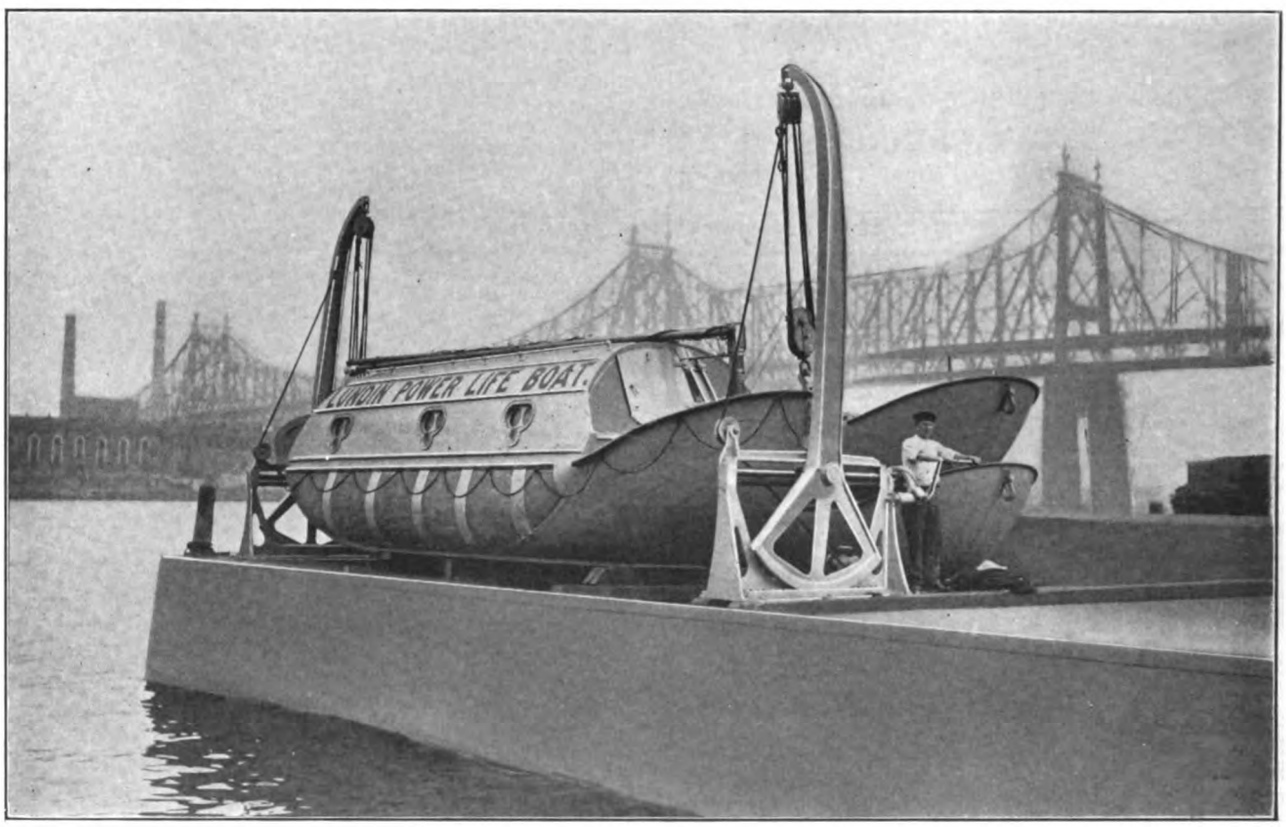
LUNDIN LIFEBOAT SYSTEM

Adopted by the United States Army Transport Service

This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to-day.



170 PERSON UNIT:—30 Ft. Lundin Power Lifeboat (outboard) 50 Persons, and Two 28 Ft. Lundin Decked Lifeboats (inboard) 60 Persons Each, Under Double Acting Welin Davits.

Let us solve your life boat problems

Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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"Electric Runways and Trolley Hoists" are the subject of Booklet 55, published by Herbert Morris, Ltd., Empress Works, Loughborough, Leicestershire. "Many an otherwise admirable organization lacks just that inter-departmental co-ordination provided by the Morris electric runway. Quick lifting, speedy traveling, easy flexibility and perfect adaptability are its leading features. It can run along the straight, round bends of large or small radius, through doorways, up or down gradients, and it can sidetrack at any point. It can be arranged for cage control with open or weather-proof cage, for remote control, for push-button control, for floor control. It can be arranged with the hoist and travel motions, each by motor; with the hoist by motor and the travel by hand; and when hand-travel is employed it can be run on ball bearings, either by pushing the load or racking the trolley along by gearing. It can be used with a grab for grabbing many kinds of materials, with electro-lifting magnet for picking up iron and steel in the raw or manufactured state, or with special slings, grips or tip buckets, as required."

"Increased Boiler Efficiency" is the title of a pamphlet published by the Diamond Blower Company, Room 75-B, Queen Victoria street, London, E. C. "Diamond steam flue blowers are machines permanently fixed in the rear end of the boiler for the purpose of keeping the tubes, plates and combustion chamber constantly free from soot and ashes. The whole operation of cleaning the boiler consists of opening a valve and turning the handle of the machine for about three minutes. This causes a jet of steam, which is highly superheated in crossing the combustion chamber, to impinge on each of the tubes in turn, carrying all the soot and ash and other non-conducting materials out through the funnel or stack, leaving the tubes and plates perfectly clean. The boiler is, therefore, in a condition to give the highest possible efficiency. The use of the machines daily will result in a considerable saving in fuel and a marked increase in efficiency. Where the boilers are not cleaned oftener than once a day it has been proved, by means of the pyrometer, that the temperature of the flue gases gradually rises as the soot accumulates. The same method shows that the temperature of these gases drops immediately after cleaning, proving conclusively that a large proportion of the heat is lost which would otherwise be applied to steam generation."

Frodair brands of special pig iron for cylinders are described in a circular published by the Frodair Iron & Steel Company, Ltd., Fenchurch House, London. "Frodair mixtures of special pig iron have long been acknowledged by scientists and practical engineers as the best and most suitable material for cylinders on account of their toughness and non-shrinkage properties. A perfectly smooth surface is obtained, and the castings are free from hair cracks, which is of great importance, especially for combustion engines. Cylinders cast with Frodair mixtures have stood the the test of time, and it is with the utmost confidence that we invite your inquiries."

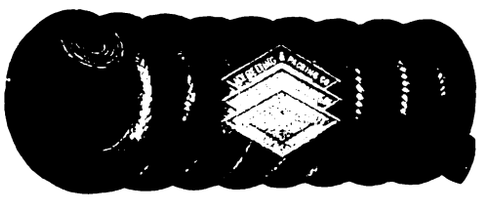
The "Conqueror" Surface Condensing Equipment is the subject of Catalogue No. 4, Section B, issued by W. H. Allen, Son & Company, Ltd., Queens Engineering Works, Bedford. "The condenser is of the Allen patent 'Conqueror' high-efficiency counter-current type. The condenser casing is of cast iron, cylindrical in form, fitted with suitable branches to take the main exhaust, the air pump suction and circulating water inlet and outlet. The tube plates are of the best rolled brass, 1 inch thick, and all tubes are of solid drawn brass, .75-inch exteral diameter by 18 I. W. G. (.048 inch) thick. The tubes are fixed in the tube plates by means of screwed ferrules and tape packing at both ends, the ferrules being provided with lips to prevent the tubes from creeping out of place. The water heads of the condenser are divided by diaphragms, so that the water passes through the tubes a suitable number of times to give the most efficient velocity in the tubes, the water first passing through the lower portion of the condenser, thence through the upper half to the discharge outlet at the top of the condenser. The condenser is tested both inside and outside the tube plates to a pressure of 30 pounds on the square inch. When the condenser is supplied with the 'Allen" system of submerged tubes, arranged in the lower part of the condenser, a few of the tubes are removed to accommodate the weirs. By the fitting of this patent arrangement a higher vacuum is obtained, and the minimum quantity of circulating water is required per pound of steam condensed. In some cases it is advisable to construct the casings of large condensers of wrought steel, and it is therefore necessary that the choice of the material of which the condenser casing should be made be left to our discretion."

COBBS HIGH PRESSURE SPIRAL PISTON

AND

VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

NEW YORK BELTING AND PACKING CO.

91 and 93 Chambers Street, NEW YORK

LONDON, E. C., ENGLAND, 11 Southampton Row

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ST. LOUIS, MO., 218-220 Chestnut Street
PHILADELPHIA, PA., 821-823 Arch Street
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Kelvite motor-driven sounding machines are described in a circular published by Kelvin, Bottomley & Baird, Ltd., 16 to 20 Cambridge street, Glasgow. "These machines have large, open horizontal dials, indicating instantaneous depths, directly under the eye of the navigating officer. With the motor-driven pattern particularly, cast after cast may be taken with the greatest ease in rapid succession without loss of time, and the depth is known immediately the lead touches bottom. Invaluable for high-speed liners when approaching land."

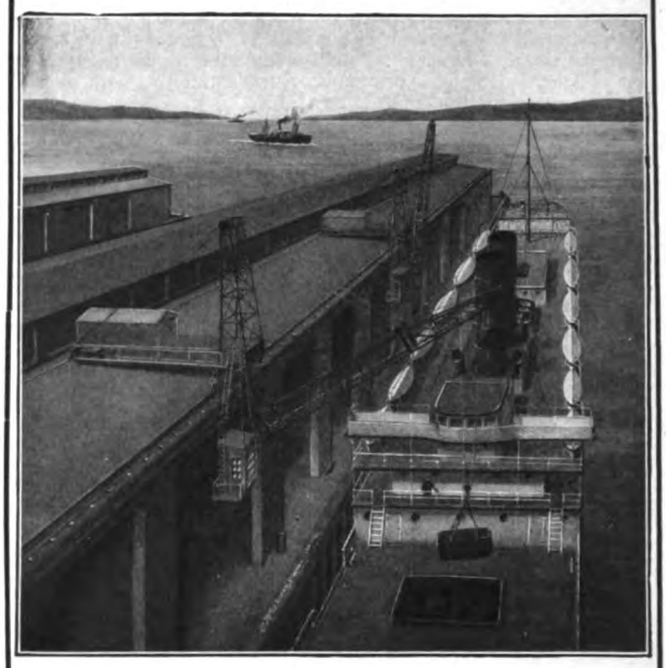
"The Coventry Handbook of Chain Gearing is the title of a 60-page catalogue published by the "Coventry" Chain Company, Ltd., 67 and 68 Bunhill Row, London, E. C. "The following pages, relative to the application of the Coventry noiseless chains for silent power transmission in the auxiliary drives of the modern petrol engine, viz.: camshaft, pump, magneto and gear box, will be interesting to all automobile manufacturers. This form of transmission, of which The Coventry Chain Company were the pioneers, is compact, noiseless, durable and exceptionally efficient, and should be considered wherever the conditions are favorable to any form of gear driving. The history of design, exhaustive tests, etc., etc., before the Coventry noiseless chains were finally approved and placed on the market in the present form, would be interesting reading indeed. Suffice it to say, simplicity of bearing construction, coupled with the lamination of high-tension steel for the links, won the day, and these, with accuracy and high-grade finish, are their distinguishing features. Until the introduction of the Coventry noiseless inverted tooth chain, numerous tests were carried out by the courtesy of our friends and in our works, and in every case the results were of a highly satisfactory nature. To such a degree is accuracy essential, both as regards chains and wheels of this type, that inquirers would be well advised to consistently take the chain specialist into his fullest confidence. The Coventry noiseless chain came to say, and at once struck the keynotes of efficiency and neatness of design. It has since more than maintained its reputation of being in the very forefront."

"The 'Incanto' Oxy-Acetylene (low pressure) System of Metal Cuttings and Fusing Welding" is the title of a pamphlet published by the Thorn & Hoddle Acetylene Company, Ltd., 151 Victoria street, Westminster. "The Incanto low-pressure system of oxy-acetylene welding and cutting affords to engineers the most powerful and valuable method yet discovered of dealing simply and economically with an immense variety of metallurgical operations which have hitherto been carried out under less favorable conditions. Acetylene ($C^2 H^2$) is nearly as heavy as air, its density being 13 where air is taken at 15. It is an endothermic gas which is decomposed at the moment of combustion into its elements carbon and hydrogen, and by this decomposition alone about 300 British thermal units are generated per cubic foot of the gas. The remaining heat is furnished mainly by the combustion in oxygen of the carbon into carbon dioxide and in a lesser degree by the combustion of hydrogen into water vapor, the total heat generated per cubic foot of acetylene being about 1,500 British thermal units. Theoretically, two and one-half volumes of oxygen are required for the complete combustion of one volume acetylene. In practice, however, with the oxy-acetylene blowpipe it is found that the best welding results are obtained with consumptions given on page 7. The flame thus produced has in its center a small white cone, at the apex of which the temperature is about 6,300 degrees F. This flame consists almost entirely of carbon monoxide, which is being converted at its extremity into carbon dioxide. Round the flame is a relatively cool jacket of hydrogen, which, not being able to combine with oxygen at the very high temperature in the immediate neighborhood of the flame, remains temporarily in the free state, and thus protects the inner zone from loss of heat whilst excluding the possibility of oxidation, which is a difficulty other methods of welding have to contend with. Autogenous welds can therefore be effected by means of the oxy-acetylene blowpipe without any deleterious effect upon the metal. The heat, in addition to being greater than that obtainable from any other blowpipe system, is also more concentrated, whilst the flame, being luminous and in the form of a short, steady jet, very little practice is required to make an unskilled workman proficient in the manipulation of the blowpipe. The acetylene is supplied by means of our patent Incanto generator, pattern B, with purifier. In our patent blowpipes we employ the injector principle, and they are very carefully designed and proportioned to meet all the special conditions with which an oxy-acetylene blowpipe must comply. They are perfectly safe for use, being constructed, even in the largest sizes, so that the flame cannot strike back. The gases are well mixed in the injector chamber before they issue from the nozzle of the blowpipe, and the nozzle itself is so constructed that carbonaceous deposit in the orifice is entirely obviated."

THE SHAW

Electric Wharf Crane

Reduces Handling Costs---Saves Time



The Shaw Electric Wharf Crane travels along **the roof** of the pier shed and offers no obstruction on the deck area.

Freight is delivered to and taken from the **inside of the pier shed** eliminating inefficient rehandling.

The crane transfers the freight between the hatch and the pier in a straight line, which is obviously **the most direct route.**

On account of the straight line hoist and transfer, comparatively **high speeds** are practicable.

Exposure of freight to the weather is reduced to the absolute minimum.

Breakage is practically eliminated due to the perfect control of all motions by the one operator in the cab.

Manning, Maxwell & Moore, Inc.

Shaw Electric Crane Co., Dept.

119 W. 40th Street, New York

BRANCH SALES OFFICES:

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"Power Transmission by Chain" is the title of a profusely illustrated 100-page catalogue published by Brampton Bros., Ltd., Oliver street, Birmingham. "The object of this pamphlet is to call attention to the adaptability and high efficiency of chains for general driving purposes, feed mechanisms, etc. With this in view, we have set out brief descriptions of the different types of chains most commonly used, viz.: block, roller and silent chain. It is not possible to discuss chains of other types, such as stud chains, plate chains, carrier chains, etc., as these are generally designed for special purposes, nor do we illustrate all the types we manufacture, as some of these are regarded by our clients as of a private character. We have, however, indicated that we are prepared to consider the manufacture of special chains to users' own designs. The employment of chains for power transmission is rapidly extending in connection with all classes of machinery, and the attention of engineers, when considering methods of transmission, should be directed toward embodying chain drives of suitable type. We are aware that belts, ropes, and the several forms of toothed wheel gearing will always have their place, but in many instances chain drives which present greater advantages might be more profitably employed."

BUSINESS NOTES

AMERICA

NEW AGENCIES FOR TERRY STEAM TURBINE COMPANY.—The company has appointed Fidanque Bros. & Sons, of New York and Panama, with main office at 15 Whitehall street, New York, as representatives for the Republic of Panama and the Canal Zone. The Cleveland office, in charge of Mr. L. G. Finlay, has moved from 710 New England building, to 503 Union building.

THE UNITED STATES GOVERNMENT has recently placed orders for Mietz & Weiss oil engines for the following sizes: Seven 45-horsepower compressor units, two 18-horsepower compressor units, one 7-horsepower compressor unit, one 150-horsepower M & W direct-reversible marine engine, two 12-horsepower compressor units. A. Mietz, 128 Mott street, New York, send us the following particulars: "They are using a large number of these engines in their different departments, and we might mention that in the radio department of the Government we have furnished in the past three years about twenty-five (25) of our vertical type oil engines for driving generators. The engines are built in sizes ranging from 2 to 400 horsepower for operation on common kerosene, fuel oil and crude oils, and are also in use by a number of the foreign governments, and also by such leading people in their lines as the Pennsylvania Railroad Company, Lehigh Valley Coal Company, New York Central Railroad Company, Armour & Company, and a large number of municipalities throughout the country for pumping and electric lighting."

JOHNS-MANVILLE EXHIBIT AT N. A. S. E. CONVENTION.—At the recent N. A. S. E. convention, New England States Division, held at Providence, R. I., the H. W. Johns-Manville Company, New York, had an interesting exhibit of power plant materials. The large J-M line of packings was exhibited, including J-M Kearsarge, J-M Sea Rings and J-M Permanite, as well as J-M pipe and boiler coverings, J-M boiler preservative, J-M high-temperature cements, etc. A new packing, called J-M Seigelite, attracted attention. This is a fibrous material, treated so that it is said to be unaffected by the action of hot or cold water, oils, grease, gasoline, benzine or air. It contains no rubber or rubber substitutes. When immersed in water it is said to become extremely tough, resembling rawhide. Another new product also shown was the J-M Mobilite electric lantern. It differs from flashlights in that it operates on standard-size dry batteries, and will burn intermittently for 150 hours. It throws a brilliant light, and is, of course, absolutely safe. This lantern would appear to be an accessory of considerable utility around the boiler and engine room. Special interest was lent to a display of J-M Transite asbestos fireproof shingles, as the Salem conflagration is still very fresh in memory. A report in *Safety Engineering* stated that the wooden shingle roof was mostly to blame for that disaster. These J-M shingles, being a product of asbestos and Portland cement, are fireproof. A large corps of J-M salesmen was present to greet trade friends and give information.

Westinghouse Turbines, Reduction Gears and Auxiliaries

FOR MARINE SERVICE

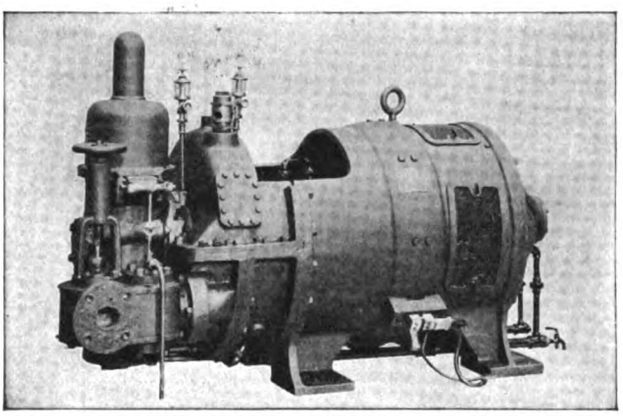
TURBINES
of highest efficiency and reliability resulting from 19 years of experience; over 3,000,000 hp. built and building.

REDUCTION GEARS
of small and large power for propelling units and auxiliary drives. Over 95,000 hp. built. Cruising gears for two U. S. Battleships building.

GEARED TURBINE UNITS
of small and large power for propelling vessels of all classes and for auxiliary drive. The most efficient propelling unit built

TURBO-GENERATORS
built in sizes from 1 kw. up—both direct-connected and gear driven. These units are simple, reliable and very efficient.

BRIDGE CONTROL
for operating main turbine from bridge. Instantaneous operation, avoids confusion and accidents. Found satisfactory in test by Navy Department



25 KILOWATT DIRECT-CURRENT TURBO-GENERATOR

CONDENSING PLANTS
for main turbine and turbo-generator. Exceptionally high vacuum maintained. Ideal units for marine turbine service.

CONDENSER PUMPS
High efficiency air, circulating and condensate pumps. Westinghouse-Leblanc Air Pump produces highest obtainable vacuum. No loss of fresh water.

CENTRIFUGAL PUMPS
of all sizes for high and low pressure service. Boiler-feed and fire pumps; turbine or motor driven. These pumps are simple and rugged and very reliable.

CENTRIFUGAL FANS
of all sizes for ventilation and forced draft. Turbine or motor driven. Horizontal or vertical type. Strong, compact and efficient.

AIR FURNACE IRON CASTINGS
of all sizes made in a thoroughly modern foundry. Large castings and turbine cylinders a specialty.

The Westinghouse Machine Co.

Prime Movers and Auxiliaries

East Pittsburgh, Pa.

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SAN FRANCISCO Hunt, Mirk & Co.
SEATTLE Hunt, Mirk & Co.
HAVANA Galban & Co.
SAN JUAN Porto Rico Construction Co.
IQUIQUE, CHILE J. K. Robinson & Co.
TOKIO, JAPAN Takata & Co.
CARACAS, VENEZUELA H. I. Skilton
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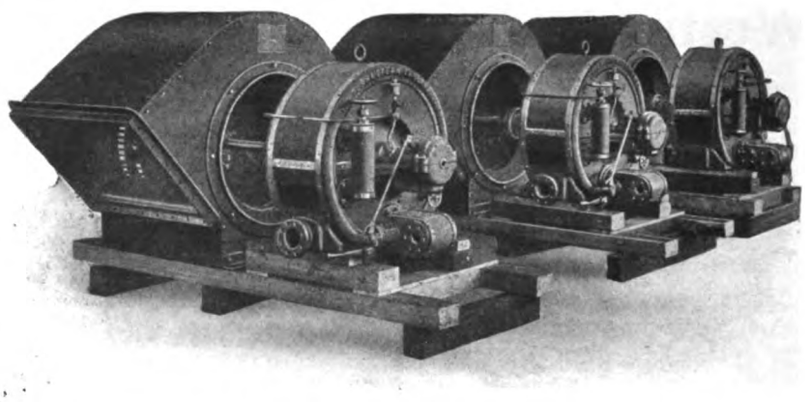
L. W. FERDINAND & COMPANY, manufacturers of marine glue, linoleum cements, etc., 201 South street, Boston, Mass., have received the following letter from the Curtiss Aeroplane Company, Hammondsport, N. Y.: "We are pleased to state that your waterproof liquid glue has been used for securing the canvas to all of the Curtiss flying boats. It is also used on the Rodman Wanamaker transatlantic flying boat the *America*. It is perhaps unnecessary to add that in the construction of these water-flying machines dependence is placed on nothing less than the very best materials the market affords."

MARINE REFRIGERATION.—The following report has been received from the Brunswick Refrigerating Company, 132 Jersey avenue, New Brunswick, N. J., regarding plants installed since those reported in the August issue: New York & Cuba Mail Steamship Company, 2-ton plant for the steamship *Bayamo*. This makes the eighth plant sold to the New York & Cuba Mail Steamship Company for their freight service, and includes all of their freighters. The steamers *Antilla, Santiago, Camaguey* and *Guantanamo* were equipped with 4-ton refrigerating and ice-making plant for ship's stores' work, and the *Yumuri, Manzanillo, Matanzas* and *Bayamo* were equipped with 2-ton plants. The Texas Company ordered two ½-ton plants in duplicate unit for their steamers *Louisiana* and *Northtown*. This makes a total of six plants sold to this company, the other two plants being installed on the steamships *Texas* and *Illinois*. The American-Hawaiian Steamship Company are installing 2-ton Brunswick plants on their steamers *Mexican* and *Columbia*. A total of twenty-four ships of the American-Hawaiian line are now equipped with Brunswick plants. The New York Shipbuilding Company has placed an order for a 1-ton refrigerating plant for ship's stores' work for the lumber steamer which they are now building for the Carpenter-O'Brien Lumber Company, Jacksonville, Fla. Full data regarding refrigerating plants will be furnished on request. These plants can be installed at very short notice, the material being shipped a day or so after the measurements are obtained if it is necessary, and the plant installed by men working overtime. For further particulars address the Brunswick Refrigerating Company, 132 Jersey avenue, New Brunswick, N. J.

THE WILTON SHIPYARD.—In view of the general development of ship building work in Holland during recent years, it may be of interest to briefly consider the position of the Wilton shipyard at Rotterdam as being typical of up-to-date methods and organization in ship repair work in Holland. Some thirty-five years ago the firm was established by the late Mr. B. Wilton, who started a small repairing yard with a slipway for dealing with barges and other small craft. From that small beginning has evolved the present establishment employing over 3,000 workmen, and comprising floating docks, slipway buildings, berths, fitting-out basin, giant cranes, etc., and the fine range of splendidly equipped workshops. There are two floating docks at present in use, No. 1 dock being 365 feet long and 82 feet wide, and capable of lifting a 4,500-ton ship in 90 minutes. No. 2 dock is 425 feet long and 95 feet wide, and can raise an 8,000-ton ship in two hours. To these will shortly be added No. 3 dock (now under construction), which will be 480 feet long and 110 feet wide, and will lift a 13,000-ton vessel in two and one-half hours. These docks are all of the box type, with double walls, and vessels using them have clear access to and from the River Maas (at all states of the tide) and direct passage to the sea. The floating cranes are a notable feature of the establishment, there three—of 30 tons, 50 tons and 120 tons lifting capacity, respectively, the latter having a total lifting height of 200 feet above the waterline. The advantages derivable from such plant, either for repair or fitting-out purposes, are obvious. The arrangement of the quay space affords safe and convenient berthing accommodation for upwards of a dozen large vessels, giving direct communication to workshop, etc., on shore, and an excellent system of traveling gantry and fixed cranes ensures rapid handling and lifting facilities for all materials. Another item of the shipyard's equipment which is worthy of special mention is the 2,000-ton forging press, enabling the heaviest class of forgings to be quickly and easily dealt with. Among smaller items may be mentioned the very complete installation of pneumatic tools and oxy-acetylene plants, now indispensable in modern shipyards. The constructional department of the establishment deals with a varied class of work, comprising harbor and mineral dredgers, hopper barges, large tugs, trawlers, floating cranes and elevators, and other vessels of special design, but the principal interest of this department is the building of dredging plants, and during recent

SAFETY FIRST



Machinery, as nearly Perfect as Human Ingenuity can make it, is what should be installed on Every Vessel. Duty to Humanity as well as Protection to Property is essential.

A Breakdown at Sea is a serious matter.

Prevent the possibility of any such occurrence by using

THE TERRY TURBINE

Compact: Light Weight: and Free from Vibration. When necessary, the Horizontally Split Casing allows Quick, Easy Inspection of all parts without disturbing Alignment or Steam and Exhaust Piping.

TERRY TURBINES furnish Maximum Efficiency, Economy and Safety.

Let us send you our Marine Bulletin 16H5. No obligation.

THE TERRY STEAM TURBINE CO. HARTFORD, CONN. T-187

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BEARING TALKS No. 4

Do not require oil or grease

THE U. S. NAVY

and the Navies of Russia, Japan and Argentina use "BOUND BROOK" Bushings for all purposes where bearings are required—because they are the best obtainable—most reliable in extreme emergencies, and most economical.

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years a large number of dredgers of all types and sizes have been built, and delivered by the firm to places as far distant as Australia. The company (which is represented by two London offices, Billiter buildings, E. C., for the repair department, and 118 London Wall, E. C., for the dredging and constructional departments) is sending some interesting models to the forthcoming Shipping Exhibition at Olympia in September, which will include a model of the entire shipyard on a scale of 1/150 full size. On account of the increasing pressure of work upon the present establishment (which is incapable of further expansion) the company have acquired a fine site of some 50 acres a few miles lower down the River Maas, with the intention of laying out another shipyard to cope with the rapidly-increasing development of their business.

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TRADE PUBLICATIONS.

AMERICA

National Bulletin 9-C describes some tests of Kewanee unions and is published by the National Tube Company, Frick building, Pittsburg, Pa. "This National bulletin contains a full description of several special tests made on Kewanee unions, including the following: Expansion test of Kewanee unions, with tabulated details; air test under water of Kewanee unions (the test to which every individual Kewanee union is subjected before leaving the factory), with illustrations; service test of Kewanee unions (illustrations of two Kewanee unions which were disconnected and reconnected over 1,000 times and remained tight at the end of each test)."

"A Handbook of Talbot Boilers and Efficiency Data" is the title of a neat pamphlet just published by the Talbot Boiler Company, 120 Liberty street, New York. "The object of this handbook is to compare the various types of prime-movers, and particularly steam boilers, with the Talbot boiler, which, unlike all others, relies on a forced circulation of water through a limited channel, causing many times the ordinary velocity of circulation. This fact eliminates many of the common and expensive boiler troubles, such as over-heating the tubes and the necessity of removing scale. The downward circulation of water and the consequent efficiency because of the entire top of the boiler being filled with water and the furnace lined with tubes full of steam traveling 10,000 feet per minute have resulted in nearly 90 percent true thermal efficiency. The Bureau of Mines' standard for computing efficiency, in which the steam temperature is deducted, bring Talbot boiler efficiencies to more than 100 percent, as the steam is usually hotter than the temperature of the departing waste gases of combustion in the up-take or stack. There are so many other features, such as safety, durability, ease of repair, compactness, small weight, automatic regulation and completeness of equipment, that these can only be appreciated after comparing the Talbot boiler with all others, a number of types being illustrated herein for this purpose. Although comparatively new, Talbot boilers are now being shipped to all parts of the world. The largest user of power in the United States ordered and was supplied with five times the horsepower of Talbot boilers last year as compared with the year before. The Talbot boiler is the greatest change in boilers since their beginning."

"The Sirocco System of Heating and Ventilation" is the subject of Bulletin No. 27, just issued by the American Blower Company, Detroit, Mich.

Electric heating and cooking devices for use on board ship are described in a catalogue published by the Simplex Electric Heating Company, Cambridge, Mass. This company "makes everything for heating and cooking by electricity."

"Searchlight Projectors" is the title of a handsomely illustrated 88-page catalogue just issued by the Carlisle & Finch Company, Cincinnati, Ohio. "We have embodied in our marine projectors all the latest improvements to be found in this class of apparatus. For lake and seagoing vessels, projectors possess many advantages over the lights using silvered copper reflectors. The great accuracy of curvature of the mirrors produces a light of greater carrying power, which will render objects visible at over twice the distance possible with the silvered copper reflectors. The general arrangement of mirror and carbons will be readily seen by referring to the several illustrations following. Owing to the peculiar position of the carbons, all the light produced at the arc is cast upon the mirror, and is then both reflected and refracted, so that it emerges from the lamp in a practically straight ray. A focusing screw and hand-wheel are provided for varying the spread of the light. The mirror is contained in a spun copper, bowl-shaped receptacle, which protects it from moisture and damage. The weight of the projector is carried on a train of steel balls. The friction is thus so reduced that the lamp may be turned in either direction with the greatest ease. The most important requisite of a projector is that it be reliable. To this end we have carefully designed all the parts of our projectors. The base is made broad and heavy, and is of such width that the projector does not look topheavy, but, on the contrary, presents a most symmetrical appearance, as will be seen by referring to the illustrations. The upper part of the base is hollow and swivels on a stout pivot on the lower portion, thus allowing the projector to be swung horizontally. The contacts for conducting the current to the lamp mechanism are in this upper part, and make contact on two brass rings, fastened to but insulated from the lower casting. The overhanging lip of the upper casting protects these contacts and the steel balls from dirt and moisture. The projector may be turned in a continuous circle, and there are no wires to be twisted off in so doing."

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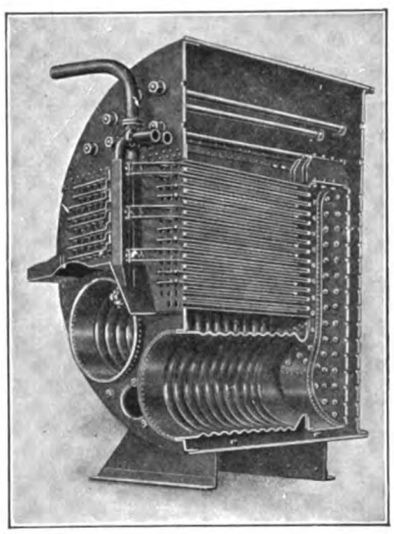
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

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PEOPLES GAS BLDG., CHICAGO

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Scully flanging clamps are described in a circular issued by the Scully Steel & Iron Company, Chicago, Ill. The company makes the following statement regarding these flanging clamps: "Single-cylinder—using air, steam or water-pressure —one-third of the power required of other machines—self-contained—no special foundation required."

Kelly grates are described in Catalogue G, published by the Kelly Foundry & Machine Company, Goshen, Ind. These grates are stated to be "The boiler maker's choice," and the reasons given are as follows: Because Kelly rocking and dumping grates are backed by over twenty-seven years of experience. Because Kelly rocking and dumping grates are simple, substantial, efficient and are favorably known throughout the steam power field. There are no complicated parts to get out of order; they are easily installed, and we guarantee every set to give perfect satisfaction in the strictest sense of the word. Furthermore, our large output of grates and boiler fronts allows us to make you a price that is right. You should have both our grate catalogue C and foundry catalogue G, with prices, in your files."

"The Application of the Electric Hoist" is the title of Bulletin 301-A, just published by the Pawling & Harnischfeger Company, Milwaukee, Wis. "In these days of keen competition the problem of handling material economically and rapidly has become a very important one. Wherever loads are to be moved about which are too heavy for one man, the electric hoist may prove to be a great money saver. We have in mind an overhead monorail hoist traveling on the lower flanges of an I-beam. The beam may be suspended from the roof of the building, or if the monorail is to cover the yard, the runway may be supported from A frames. Two or three bare collector wires are strung along the runway, which serve to supply the hoist with electric current and the hoist is ready for work. The application is well shown in the following illustrations: The one shown on page 2 shows the application of a small hoist in a printing plant, where the heavy rolls of paper are easily and quickly raised bodily onto the press. An apprentice can do this without any other help."

Pneumatic tools for boiler makers, foundrymen, iron workers and machinists are described in Booklet 698, published by the Ingersoll-Rand Company, 11 Broadway, New York. A copy of this booklet will be sent free to any of our readers upon request. "The Ingersoll-Rand pneumatic tool line is the most extensive offered the trade, and covers all the requirements of the power plant, railroad shop, boiler shop, machine shop, foundry and iron worker. It comprises such well-known tools as the Little David drills, flue rollers, riveters and chippers, Imperial hoists and Crown hammers. In the pneumatic tool field the trade names Little David, Imperial and Crown are recognized as representative of the very best practice. They stand for an efficiency and economy of operation unapproached by others. In designing these tools, such factors as ease of operation, adaptability, large work capacity and low maintenance and air consumption have been so well provided for that many plants, including some of the very largest, have standardized on them. They are built as well as it is possible to do so. Metals of quality are used throughout; wearing parts are of hardened and ground special alloy steels, and special oil areatment of metals results in a product of exceptional lasting qualities."

The Coen system of mechanical oil burning is described in a 32-page illustrated catalogue published by Coen Company, San Francisco, Cal. This system is stated to be the latest improved method of fuel oil burning for marine and stationary boilers, heating plants, etc. The following statement is a part of the introduction to the catalogue: "One of the most important advantages derived from the use of the Coen mechanical system is that make-up feed water for the boilers can be reduced to a minimum, as no steam escapes up the stack. The importance of this feature to a modern steam plant, operating where water is expensive or of a poor quality, cannot be too highly emphasized. Frequent boiler cleaning is expensive. To illustrate this point we will take a plant developing 1,000 boiler horsepower per hour, equipped with steam burners using 5 percent of total steam for atomizing. 1,000 B. H. P. = 34.5 pounds water × 1,000, or 4,140 gallons per hour. Five percent of this, or 207 gallons, are lost through the burners and has to be made up with fresh water. This means that 207 × 24 × 30 = 149,000 gallons of fresh water per month has to be introduced into the boilers on account of the steam burners. How much would this water cost in your locality and how much scale would it form? While you are figuring, don't forget the increasing loss in boiler efficiency that is going on while this scale is forming. The Coen mechanical system is the simplest on the market to-day and the safest, furnace explosions being unknown with this system."

IN counting the revolutions of engines, turbines, motors, line shafting or the revolving parts of any machine, there is nothing equal to the

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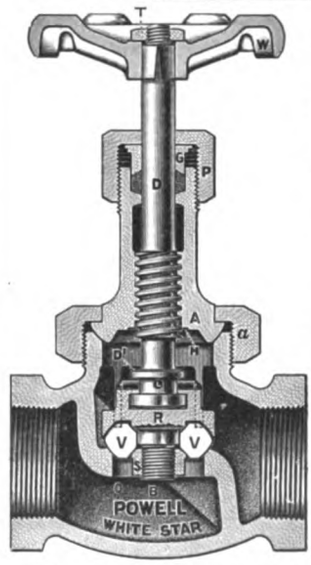

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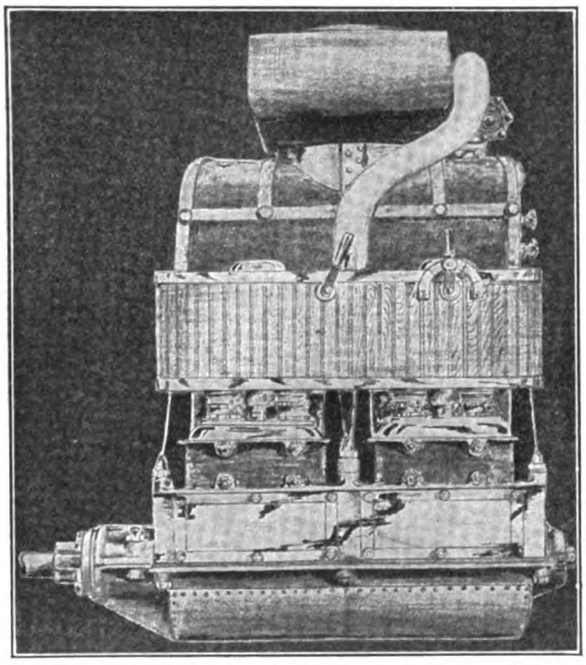

SAVE THEIR COST

They save their first cost after each year's hard work. We guarantee then, to operate on $.003 per horsepower average each hour for fuel and lubrication If the first cost of a competing gas engine were nothing you would lose money after a year's hard work. The largest user of marine engines in the U. S. uses TALBOT Steamers built in sizes 15 to 15,000 H. P. 50 horsepower occupies 3½ feet fore and aft space. May we forward our Hand Book?

TALBOT BOILER CO., 120 LIBERTY ST. NEW YORK

"Resisto," a fire-resisting compound, is the title of a circular published by William Clifford & Sons Company, 360 Union avenue, Elizabeth, N. J. "Resisto is a fire-resisting compound, ready for use in the form of paint and putty; protects and preserves firebrick, fire-tile and iron; is a money saver wherever a high temperature is used; where used, requires no drying out; fires may be started at full force immediately after applying it; will vitrify quickly on the surface of firebrick and preserve them from the action of the flames; prevents firebrick from cracking, crumbling or clinkering; will protect the walls of any receptacle exposed to great heat, whether brick or iron; vitrifies on either; applied in either paint or putty to rivets, bolt heads, nuts, studs, rods, or other iron work it will add greatly to their life; will do away with the need of frequent repairs and many occasions for shutdowns; is the best known invention as a fire-resisting compound for railroads, steamships and factory work."

"The Planet Roto Telescoping Steam Soot Blower for Horizontal Return Tubular Boilers" is the title of an illustrated catalogue which has just been issued by the Bennet-Dluge Company, 265 Jefferson avenue, Detroit, Mich. "The Planet differs constructionally from any other machine on the market in its telescoping jet arm and cam track features. The telescoping arm is caused to transverse the exact flue sheet area by the shape of the cam track, and every tube is blown into directly. Reference to the drawings on another page herewith will show this construction. Also note the extreme dotted lines in front view. This is the path of the extreme jet, always blowing into an extreme tube, the other tubes being blown as the telescoping arm passes in front of them. Particular attention is called to the side view of the Planet, showing the steam jets at close range to the flue sheet, while the front view shows the actual number of jets, all blowing at the same time. Herein we obtain very high efficiency, practically blowing directly into the tubes and setting up an intense draft, with the combined force of all the jets. This is one of the biggest talking points in the Planet, which we emphasize. In conclusion buy a Planet, because it will prove itself to be the most useful boiler appliance in your plant. Think of it, clean tubes all the time without the dirt and inconvenience! Hard work, time and fuel actually saved. Write to us, giving size of plant, number and diameter of boilers, steam pressure, and we will return blanks with necessary information for installing or advise our local representative of your interest. This company also manufactures a blower for watertube boilers, covering all of the most common types now in use. Write for the watertube circular, and also of our internal feed-water purifier. All Planet boiler specialties, and all of the same high-grade working efficiency such as the Planet roto telescoping blower just described."

Smooth-On Instruction Book No. 15 has just been published by the Smooth-On Manufacturing Company, Jersey City, N. J. "This book is the largest and most complete book that we have ever issued. It tells about the eight different Smooth-On iron cements, Smooth-On concrete iron paint and the Smooth-On coated corrugated iron gaskets. The Smooth-On iron cements No. 1, No. 2 and No. 3 are used by the steam engineering trade for making steam screw thread joints, steam flanged joints and for general repairing purposes, such as repairing cracked castings, pumps, etc. There are 60 pages in this book devoted to illustrations of work done with the above cements. The Smooth-On castings No. 4 is the foundry cement used for smoothing over rough castings, filling blowholes, etc.; is fully illustrated on pages 62 to 67. Smooth-On joints No. 5 is used for making hub joints on cast iron pipe; for this purpose it is used by gas engineers and for large water mains. Explained on pages 68 to 71. Smooth-On rivet cement No. 6 is a plastic cement used in structural iron work, vault light work, etc., filling up rivet heads, seams and uneven places on plates of iron or steel. Pages 72 to 75. Smooth-On iron cement No. 7 is a hydraulic cement applied alone or in combination with Portland cement and sand, for water-proofing, dust-proofing, oil-proofing, gasoline-proofing and hardening concrete. Partial description of this cement on pages 76 and 85. Smooth-On firebrick cement No. 8 is a combination of Smooth-On iron cement and the very best quality of heat-resisting fireclay. Pages 88 to 90. They are combined under heat and pressure to a very fine powder, unequaled for setting or coating firebricks. Smooth-On concrete paint is a fluid preparation of Smooth-On iron cement for surfacing concrete to prevent dusting, to waterproof and increase wearing quality. Pages 86 and 87. Smooth-On coated corrugated iron gaskets, made from specially prepared iron, corrugated and then coated with Smooth-On elastic iron cement. They are unequaled for withstanding steam, water, gas or oil. Full description on pages 91-103." Any of these instruction books will be sent free to any engineer upon request.

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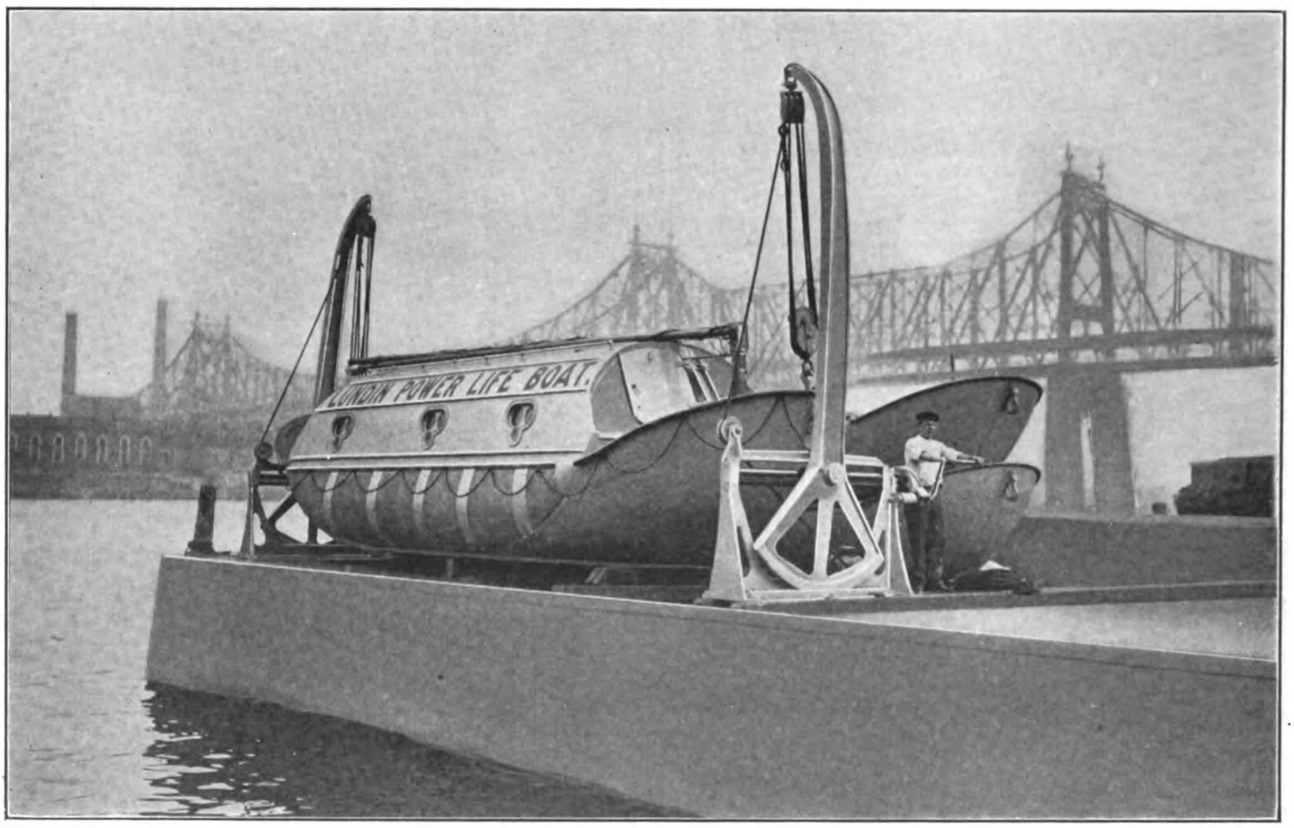

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Let us solve your life boat problems

Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

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"NTC" regrinding valves are described in Bulletin 7-D, just published by the National Tube Company, Frick building, Pittsburg, Pa. The illustrations in this circular show a valve from photographs taken at three different angles which was opened and closed 327,094 times. After being reground several times the valve was opened and closed, according to the Bulletin, over 3,046,280 times, and is still in use.

"Appliances for Burning Fuel Oil" is the subject of an illustrated 32-page catalogue just published by Tate, Jones & Company, Empire building, Pittsburg, Pa. "Oil competes with coal all over the United States on the cost basis. In other words, it is now possible to buy oil fuel on the basis of actual heat units per pound as cheaply as coal can be bought. But this understates the case. Given equivalent values in heat units per pound, oil fuel is far cheaper than coal, because at least 25 percent more heat is procurable from the oil. This is due to the difference in combustion conditions. To burn coal, a large amount of air is required. Much of this large volume passes out through the stack carrying heat with it. Oil fuel can be burned completely with much less air so that the stack waste is far less than with coal. In addition to the stack waste with coal, there is considerable wate of heat in the ashes and a further waste in the unconsumed carbon that goes into the ash-pit no matter how careful the firing. But there are still other elements of economy in oil fuel. It is 40 percent less in weight and 35 percent less in bulk. It can be stored at less expense and it does not deteriorate when stored. The great increase in the consumption of crude oil, due to its many advantages for fuel purposes, has so encouraged the drilling of new wells that an enormous increase in production, especially in the Texas, Mid-Continent and California fields, has resulted. This keeping apace of supply and demand has maintained a fairly uniform price, and that the present low prices of oil—and even lower prices—will continue is beyond question. In addition to the United States fields the present production in Mexico amounts from eight to twelve million barrels a month, and there are single wells which produce 60,000 barrels a day. Another indication of a long-continued supply of cheap fuel oil is the fact that some of the larger oil companies are now contracting to deliver fuel oil at the present market prices for periods of three and four years. The longest contract heretofore has been for a period of twelve months."

Reilly multi-coil marine specialties—evaporators and feed water heaters—are described in bulletins published by the Griscom-Russell Company, 2124 West Street building, New York. The company states that these marine specialties already have millions of horsepower to their credit, and that they are especially designed to meet severe requirements on board ship.

TRADE PUBLICATIONS

GREAT BRITAIN

Oakum and marine glue are described in circulars published by Rylance & Sons, Mersey Works, Liverpool. One of the testimonial letters from a firm of British shipbuilders to Messrs. Rylance & Sons reads as follows: "In reply to your favor of the 15th inst., and your further P. C. respecting marine glue, we beg to say that we have used your marine glue on a number of vessels constructed by us for different parts of the world, viz.: steamers for passenger and cargo service, and on the rivers Amazon and Niger, and various craft for service in South America, Further India, Straits Settlements and China, in addition for vessels for service in home waters, and the glue has always given us entire satisfaction."

Single and double inlet fans for forced draft, induced draft and ventilating purposes are described in a catalogue published by W. H. Allen Son & Company, Ltd., Queens Engineering Works, Bedford. "The application of centrifugal fans to the ventilation of saloons, smoking rooms, libraries and other public rooms on passenger liners, and on ships of war, is now very extensive, ventilation being effected either by pressure or suction, by which means a purer and cooler atmosphere can be maintained constantly than is the case with the ordinary ceiling fan of the propeller type, which merely causes the air to circulate without renewing it. The problem has much in common with the previous one of mechanical boiler draft, consisting as it does in supplying the requisite quantity of air continuously, and in a manner which can be easily regulated, to suit the number of occupants of the room, building, etc. Most of the important ships which have been constructed for the British navy are fitted with fans of our manufacture, and we have also supplied fans to many of the foreign governments as well as to the mercantile marine."

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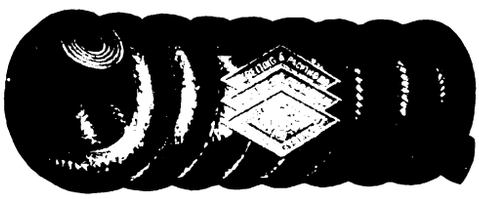
VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

NEW YORK BELTING AND PACKING CO.

91 and 93 Chambers Street, NEW YORK

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Rotary drilling machines are described in circular 33 published by George Swift & Sons, Claremont Iron Works, Halifax, England. This circular is handsomely illustrated and the pictures give a very good idea of the class of machine tools made by Messrs. Swift & Sons.

Ozonair Apparatus is described in a catalogue published by Ozonair, Ltd., 96 Victoria street, Westminster, London, S. W. It is said to be extensively used on board ship. "Ozonair Apparatus are air purifiers and not ventilators; that is, they do not introduce fresh air into the room, but purify the existing air by means of the aforementioned oxidizing properties of ozone. Their functions are to remove stuffiness (due to organic impurities emanating from the lungs, etc.), and to neutralize all odors generally found in houses, etc., such as smells from cooking, lavatories, stale tobacco, etc. Fog and tobacco smoke are rapidly cleared away, and flies will not remain in a room where there is ozonized air. It is not claimed that the use of the apparatus will sterize the air of a room. It destroys, however, that impure condition of atmosphere obtaining in rooms which tends adversely to affect the nervous system and which so often leads to the development of anaemia, consumption and other troubles, and it renders the air fresh and invigorating, and as similar as possible to the conditions found at the seaside and on mountain tops."

"An Oxy-Acetylene Plant for Welding and Cutting Metals" is the title of a 26-page catalogue published by Acetylene Corporation, Ltd., 49 Victoria street, Westminster. The oxyacetylene system for welding metals and cutting steel and iron is a process whereby the enormous heat value of acetylene is utilized in conjunction with oxygen to obtain a concentrated and easily controlled flame of intense heat. The total heat generated per cubic foot of acetylene is over 1,500 British thermal units, and is therefore greatly in excess of either hydrogen or coal gas. With the oxy-acetylene blowpipe the best welding results are obtained with 1.5 volumes of oxygen to one volume of acetylene, and the flame thus produced has in its center a white cone, at the apex of which the temperature is about 6,000 degrees F. The localization of this intense and concentrated heat enables a weld to be carried out rapidly and economically. The flame will not burn the metal by oxidation or cause any injurious effects. Little practice is required to make the workman proficient in the simple manipulation of the blowpipe."

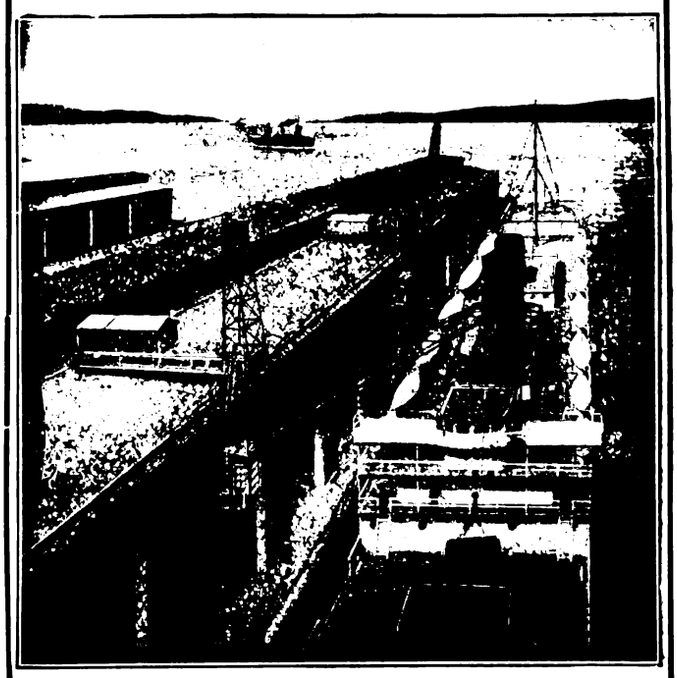
"Bemal" brass condenser tubes are described in an illustrated circular issued by the Yorkshire Copper Works, Ltd., Leeds. 'Bemal' is an attempt to solve the seemingly everlasting corrosion problem, and the photographs on the other side convey an idea of how far the attempt has succeeded. The first set of photographs shows the progression of a corrosion test of 'Bemal' and Admiralty mixture (70/29/1) carried out over a period of sixty-four weeks. The blocks show the condition of the tubes after having stood the corroding action for various periods up to sixty-four weeks, when the test came to an end by reason of the total failure and collapse of the 70/29/1 alloy; the 'Bemal' tubes were practically untouched by corrosion. In the second set of photographs are shown the final results of a fifty-four weeks' test carried out on similar lines but on a more extended scale. In this instance tubes of Best Brass (70/30) and Admiralty mixture (70/29/1) made by four leading tube manufacturers were tested alongside 'Bemal,' and the final results only are shown (the whole of the specimens, including those withdrawn at the intervening stages, were on view at the Non-Ferrous Metals Exhibition, held in the Agricultural Hall, London, in June, 1912)."

A leaflet describing a new one-ring design for the patent pump bucket made by the N. P. Pump Bucket Company, 11 Queen Victoria street, London, E. C., has just been published by the company. "No boiler feed temperature will affect the life of an N. P. ring, although it seriously shortens the life of many asbestos, flax, hemp and other fiber cups and rings on the market. Will withstand the action of gritty water when fitted with aur specially designed anti-friction white metal insertion better than any other composition. The wide and practically frictionless working surface is expanded by the pressure to the cylinder walls, and it will at once be seen that a cup ring in which a lip only a fraction of the depth of the N. P. ring is provided to resist the pressure can never approach the N. P. ring for efficiency and durability. The rings expand as they wear and exert a uniform pressure all round liner. They are always tight, are not split, do not cause uneven wear, and are very elastic, reducing wear on liner to a minimum. An N. P. will work in a worn liner up to reasonable limits. There is no unnecessary friction when the pump is used for high or low duty, this being automatically adjusted by pressure. Slip reduced to a minimum; steam and wear-and-tear saving; reboring expenses considerably reduced; simplicity itself; no complicated spring devices to get out of order."

THE SHAW

Electric Wharf Crane

Reduces Handling Costs---Saves Time



The Shaw Electric Wharf Crane travels along **the roof** of the pier shed and offers no obstruction on the deck area.

Freight is delivered to and taken from the **inside of the pier shed** eliminating inefficient rehandling.

The crane transfers the freight between the hatch and the pier in a straight line, which is obviously **the most direct route.**

On account of the straight line hoist and transfer, comparatively **high speeds** are practicable.

Exposure of freight to the weather is reduced to the absolute minimum.

Breakage is practically eliminated due to the perfect control of all motions by the one operator in the cab.

Manning, Maxwell & Moore, Inc.

Shaw Electric Crane Co., Dept.

119 W. 40th Street, New York

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BUSINESS NOTES

AMERICA

If you have an extra difficult stuffing-box to pack, the Peerless Rubber Manufacturing Company, 16 Warren street, New York, will send you a box of "Peerless" piston and valve rod packing on trial. The company states that "We will let you return any part of the box and pay you full value by return mail." "Peerless" piston and valve rod packing has been used for many years by marine engineers all over the world, and is stated to have given universal satisfaction.

Protecting the Gates of the Panama Canal.—So much has been said about the wonders of the Panama Canal as a whole that many of its remarkable and interesting details have been overlooked. Although no new principles were involved in the construction of the canal locks, they are among the most interesting features of the entire canal. The locks at Gatum are not only the largest in the world, but altogether comprise the largest monolithic structure of its kind ever built, exceeding in volume the great Assouan Dam, and bulking two-thirds as large as the Great Pyramid. Special articles have appeared in the magazines about different features of these locks, their construction and operation, and the wonderful electrical devices used, not only at the locks, but at various points from the Atlantic to the Pacific. Throughout the length of the canal every precaution is taken to guard against accident, and since the locks are naturally one of the most vulnerable points, numbers of ingenious devices have been installed to guard them from the possibility of injury. It is conceded that in case a vessel should get out of control in entering a lock, or should be given the wrong signal to go ahead, there is every possibility that its weight would come in contact with the gates with sufficient force to spring the gates to an extent which would prevent their opening; or by opening the gates, let out the water, to the destruction of the vessel, by breaking its back on the floor of the lock. To prevent any possibility of an accident of this kind, chain fenders are stretched across the canal 100 feet in front of each of the entering lock gates, and also in front of the guard gates at the Pacific end of the canal. These chains are maintained in a taut position when the gates are closed, and are lowered into grooves in the bottom of the lock when the gates are opened for the passage of a ship. When a ship from the Atlantic enters the forebay at the lower end, its way will be barred by one of these chains. Interlocking electrical control mechanism prevents the lowering of the chain until the gates are opened, and after the ship has passed into the lock chamber the gates cannot be closed until the chain has been raised into position again. As the guard chain drops to the bottom of the canal, a miniature guard chain stretched across the control board will drop out of sight in a slot. Following the general policy of all the work done by the Government engineers on this great project, the gate-protecting mechanism has been selected, designed and tested with great care, to avoid every possibility of accident or failure. Only the highest quality of material is used throughout, and an unusually high factor of safety has been demanded in all the gate fender mechanism to provide for unforeseen contingencies. The chains vary in length from 415 to 780 feet, and are made from the very highest quality of wrought iron bar 3 inches in diameter. They are raised and lowered by a special form of hydraulic mechanism known as "chain fender machines." There are two of these machines to each chain—24 chains and 48 machines. Chain ends are anchored in pits on either side of the lock, and the chain runs over a series of sheave wheels, which raise and lower it by means of the cylinders, plungers and valves composing the chain fender machines. The cylinder of the machines are 20 feet long and 40 inches in diameter, water being admitted to the cylinder through electrically-operated, steel hydraulic valves, connected to 6-inch pipes. Forty-six of these valves, one for each lock gate of the canal, were built by the Nelson Valve Company, Chestnut Hill, Philadelphia, Pa., for operating the chain fender machines. Ordinary working pressure of the machines is to be approximately 150 pounds, but the valves are constructed and tested to stand a pressure of 2,500 pounds per square inch in emergency. This emergency may never arise, or it may be of frequent occurrence. The engineers designing the chain-protecting mechanism estimate that even should a large vessel strike the chains with considerable momentum, the factor of 2,500 pounds per square inch for the cylinders, piping and valves affected by the impact would be sufficient for safety. The first effect of such an impact would be to raise the pressure in the machine to 750 pounds, at which point two resistance valves open and release water through small ports. To allow, however, for the possibility of a much higher pressure before relief, the operating valves were de-

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of highest efficiency and reliability resulting from 19 years of experience; over 3,000,000 hp. built and building.

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of small and large power for propelling units and auxiliary drives. Over 95,000 hp. built. Cruising gears for two U. S. Battleships building.

GEARED TURBINE UNITS
of small and large power for propelling vessels of all classes and for auxiliary drive. The most efficient propelling unit built

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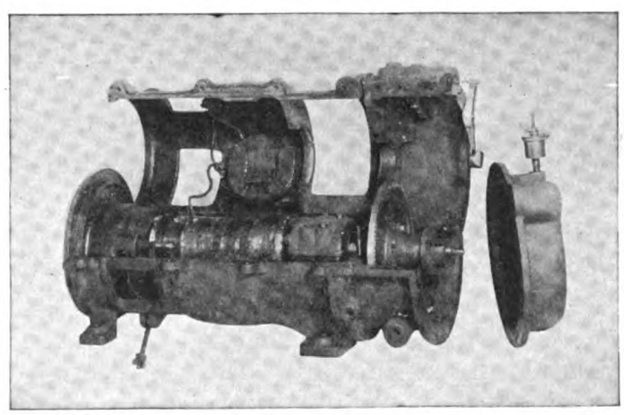
built in sizes from 1 kw. up—both direct-connected and gear driven. These units are simple, reliable and very efficient.

BRIDGE CONTROL
for operating main turbine from bridge. Instantaneous operation, avoids confusion and accidents. Found satisfactory in test by Navy Department



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CONDENSING PLANTS
for main turbine and turbo-generator. Exceptionally high vacuum maintained. Ideal units for marine turbine service.

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High efficiency air, circulating and condensate pumps. Westinghouse-Leblanc Air Pump produces highest obtainable vacuum. No loss of fresh water.

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of all sizes for high and low pressure service. Boiler-feed and fire pumps; turbine or motor driven. These pumps are simple and rugged and very reliable.

CENTRIFUGAL FANS
of all sizes for ventilation and forced draft. Turbine or motor driven. Horizontal or vertical type. Strong, compact and efficient.

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of all sizes made in a thoroughly modern foundry. Large castings and turbine cylinders a specialty.

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signed, built and tested by the Nelson Valve Company to stand a pressure of 2,500 pounds per square inch, in accordance with the Government specifications.

Small Valves are Hard to Keep Packed.—Recognizing this fact, Greene, Tweed & Company, 109 Duane street, New York, make a specialty of "Palmetto" twist packing for just such a purpose, and will send any engineer a free sample spool. This packing is stated to be exactly suited for keeping valves from leaking, because it is made of heat-resisting materials which contain such a lubricant as to make it soft and pliable even in a small stuffing-box.

For South American Trade.—Wishing to enlarge the market for the products of their clients, Mr. W. L. Rickard, of Rickard & Sloan, Inc., New York, will make an extended trip through South America, leaving New York the latter part of September. He will visit the principal cities on both coasts, and will make a thorough investigation of the markets and the best method of selling machinery and mechanical materials and devices. In connection with this trip Mr. Rickard made the following statement: "For some time past several of our clients have been considering the advisability of entering the export field, particularly in South America. They have felt that the Latin-American countries offered a large market for their products, and we have been conducting a preliminary investigation in this field to ascertain the best way to reach it. Naturally, with the countries which have had the lion's share of this business at war, and their industries practically at a standstill, the question has been brought to our attention more forcibly than ever. In order that we may determine just what a manufacturer has got to do to obtain some of this business, we decided that a personal investigation was the only thing, and for that purpose I will visit the largest cities and make a thorough investigation of those of our clients who can profitably enter this field. I expect to be away between four and five months. While I dislike to take this time from my regular work, I am confident that the necessary information to enable us to make intelligent recommendations to our clients can be obtained in no other way."

Attention has been frequently directed to the danger arising from the use of boiler compounds which "carry over" in plants where the product comes in contact with live steam, such as cereal factories, packing plants, breweries, ice plants, creameries and others. The risk of employing boiler compounds that "carry over," or otherwise injurious compounds, or water clarifiers, in plants of this kind is manifest. It stands to reason that any preparation strong enough to dissolve solid scale is strong enough to exert harmful action on food products, if it goes over with steam. In this connection it is interesting to note that Dr. C. E. Ford, Commissioner of the Department of Public Welfare, Cleveland, Ohio, recently made a laboratory test with the "J-M" boiler preservative, as the result of which it was determined that no danger whatever existed on this score. Furthermore, it is claimed that even if the preservative in question were to "carry over" there would be no contamination of the food products, as it is composed entirely of natural, harmless salts extracted from the sugar beet. Yet in spite of its harmless qualities this preservative is said to be the arch enemy of boiler scale. Its action is partly chemical and partly mechanical. On account of its strong affinity for iron it works its way through the cracks of the scale, causing it to loosen and drop off. The broken scale is then blown off or washed out. This material also has the property of neutralizing the acid properties of feed waters, bringing the alkalinity test up to the point at which all corrosion and pitting stop. This preservative forms a thin coating or film on the iron, and when used regularly, it is claimed, prevents scale-forming elements from adhering to the metal. A little book giving many interesting facts about this preservative will be gladly forwarded on request to anyone addressing the manufacturer, the H. W. Johns-Manville Company, New York.

The Wernicke-Hatcher Pump Company, Grand Rapids, Mich, writes The Boiler Maker that it will exhibit a new type of rotary air compressor at the Foundry and Machine Exhibit in Chicago. The company makes the following statement regarding this air compressor: "From a scientific standpoint this compressor is interesting for a number of reasons. It has a pure balanced rotary movement giving positive displacement, and will compress air efficiently to 100 pounds gage pressure or over in a single stage. Furthermore, it is cooled entirely by air, yet has a lower temperature rise when compressing continuously at high pressures than the best single-stage water-cooled compressors. Points of commercial inter-

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The Breaking Down at Sea of an Electric Plant, Pumping or Forced Draft Unit is a serious matter.

Absolute Dependability is needed Afloat, miles from a Machine Shop and any other source of Light and Power.

THE TERRY TURBINE

furnishes this Reliability. All internal parts can be inspected by raising the Upper Half of the Horizontally parted Casing, without disturbing Steam or Exhaust Connections.

Light, Compact and easily Accessible, TERRY TURBINES give Maximum Efficiency and Economy. It will pay you to know more about them.

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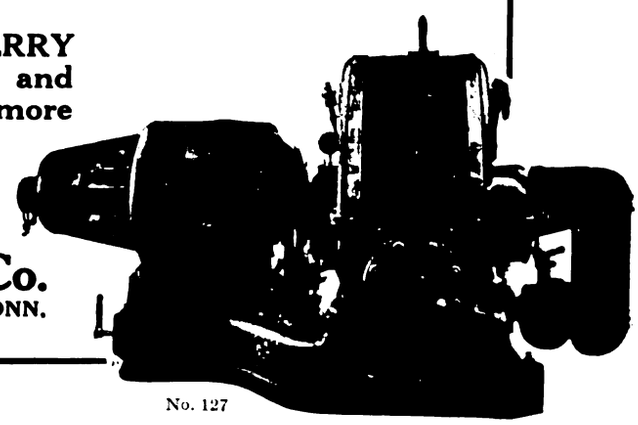

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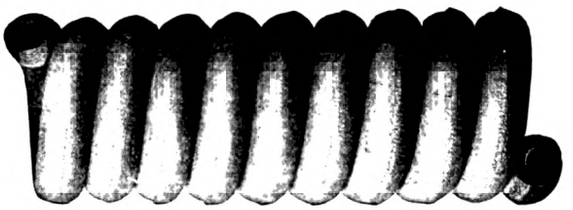
Peerless Piston and Valve Rod Packing



WE do not expect you to buy a "Pig in a Poke." If you have not yet used Peerless Piston and Valve Rod Packing and feel that you have an extra difficult stuffing box to pack, let us assume the risk.

We will let you return any part of a box and pay you full value by return mail.

Peerless Piston and Valve Rod Packing has satisfied many Engineers who were never before satisfied with the packing they had used.

Perhaps it is the packing you have been trying to think of.

Order a box under the conditions named above.

PEERLESS RUBBER MANUFACTURING CO.

16 Warren Street : : NEW YORK

For Sale Everywhere

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TRADE PUBLICATIONS.

AMERICA

Dixon's Graphite Cup Grease is described in booklet No. 75, published by the Joseph Dixon Crucible Company, Jersey City, N. J. The company states, "If you have a bearing where every other grease has failed, tell us. We will send you a sample of the right Dixon's grease."

"All the Steam You Want Just When You Need It" is the title of a circular published by the B. F. Sturtevant Company, Hyde Park, Mass. "The Sturtevant turbo undergrate blowers may be arranged to automatically respond to every demand for steam. They are extremely simple, rugged and highly efficient. The fan which creates the draft is of the disc type, built up of sheet aluminum blades and bronze hub. This fan is direct connected to a small steam turbine, a regular Sturtevant turbine with milled-in buckets and solid rotor. These are the only moving parts. There is practically nothing to get out of order or give trouble."

The "Quickwork" radial shear is described in a catalogue by H. Collier Smith, 817 Scotten avenue, Detroit, Mich. The catalogue makes the statement that this shear will accomplish what no other shear will do, and that its enormous savings in sheet metal work pay for it in a few months. It will cut, according to the manufacturer's statement, any serpentine or sudden changing lines or openings of any pattern on one passage, and it will cut rings, disks, circles and reverse curves in sheet steel ½ inch thick and lighter without cutting in from the side of the sheet.

"Electric Arc Welding Process" is the title of a booklet published by the Westinghouse Electric & Manufacturing Company, East Pittsburg, Pa. "This is the practical system. Made so because the Westinghouse Electric & Manufacturing Company has had over eight years of actual experience with arc welding in its own works, and has incorporated the suggestions of practical users in the design of the equipment. The simplest system on the market—no relays or other complicated parts to require expert attention. Any intelligent mechanic can operate Westinghouse electric outfits. No current-consuming resistance constantly in circuit. Hence power consumption is minimum. Made in several sizes up to 1,500 amperes for all kinds of welding, and for all kinds of power, steam or electric."

Valves are described in a catalogue just issued by the D. T. Williams Valve Company, Cincinnati, Ohio. According to this catalogue one of the features of the Williams valve which especially appeals to every engineer is the fact that it can be repacked under full pressure of steam or liquid without any danger of the operator being burned or scalded.

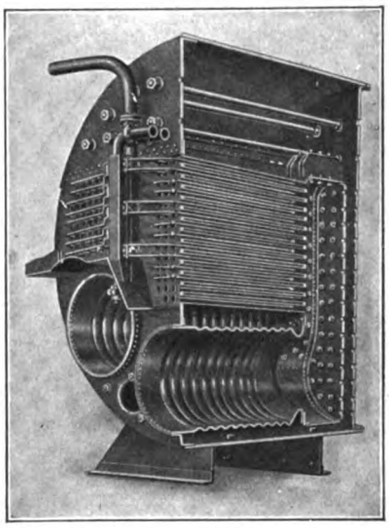
New Life-Saving Invention Adopted by the United States Navy.—The Robinson-Roders Company, 27 N. J. Railroad avenue, Newark, N. J., has published a folder stating that the United States Navy Department, after tests extending over many months, has adopted the new universal type of life-saving equipment invented and patented by Lieut. S. P. Edmonds, U. S. R. C. S., retired. The Robinson-Roders Company is manufacturing the life-saving equipment mentioned, and will push their use in the merchant marine. It was the aim of the inventor of these life-saving equipments to provide means at hand to permit passengers in case of sudden disaster to "help themselves," and the statement is made that the means of helping themselves are provided with the pillows, mattresses and life preservers manufactured by the Robinson-Roders Company.

"Link-Belt Locomotive Cranes" are the subject of a handsomely illustrated and printed catalogue of 38 pages just published by the Link-Belt Company, Chicago, Ill. "Locomotive cranes occupy to-day a highly important place in the art of handling materials. In the one machine is combined a portable hoisting engine, swinging derrick, grab-bucket unloader and switch engine. Their adaptability to a wide range of service and conditions finds for them increasing applications, as the illustrations contained herein will demonstrate. Beginning some fifteen years ago with the manufacture of very large radius heavy-duty cranes for our coal storage work, we entered the standard gage field, applying to our standard gage crane the experience gained in the manufacture and operation of these large machines, supplemented by the most modern practice and improvements of the lighter designs. The Link-Belt standard crane is a machine of all-around utility; it is driven by steam or electricity, and equipped to operate grab-bucket, hook block, electric lifting magnet, drag scraper bucket, steam shovel dipper and pile driver. The illustrations in this book show applications only—we invite the opportunity of personally explaining points of construction and operation. Our offices and agencies are shown on page 1."

SCHMIDT FIRE TUBE SUPERHEATER
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

SEND FOR OUR CATALOGUE [A]

LOCOMOTIVE SUPERHEATER COMPANY, 30 CHURCH STREET, NEW YORK
PEOPLES GAS BLDG., CHICAGO

When writing to advertisers, please mention INTERNATIONAL MARINE ENGINEERING.

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"Agrippa" and "Vulcan" drop-forged wrenches are among the many marine specialies made by J. H. Williams & Company, 63 Richards street, Brooklyn, N. Y. This company makes wrenches for every conceivable purpose for use on board ship or in shipyard.

Marine sanitary fixtures of all sorts are described in Catalogue E published by A. B. Sands & Son Company, 22 Vesey street, New York. This is a very complete and fully-illustrated pamphlet, and a copy should be in the hands of every shipbuilder, ship owner and naval architect.

"Rope that Satisfies" is the title of a booklet published by the Plymouth Cordage Company, North Plymouth, Mass. This is an interesting booklet for all users of ropes for marine or other purposes. A copy will be sent to any of our readers on request.

The graphite bushings made by the Graphite Lubricating Company, Church and John streets, Bound Brook, N. J., are in use in most of the navies throughout the world and also to a large extent on ships of the mercantile marine. The claim is made that these bushings are superior for all marine work, tackle, blocks, derricks, hoistings, etc. A catalogue will be sent fre to any of our readers upon request.

"Brownhoist" locomotive cranes for freight terminals are described in Catalogues I and R published by the Brown Hoisting Machinery Company, Cleveland, Ohio. In one of these catalogues is an illustration of a crane used on the Kansas City municipal wharves. It is stated to have replaced nineteen men, besides doing more work. On one occasion thirty-eight boxed pianos were taken from the hold of a barge and deposited in the wharf house at the rate of one per minute.

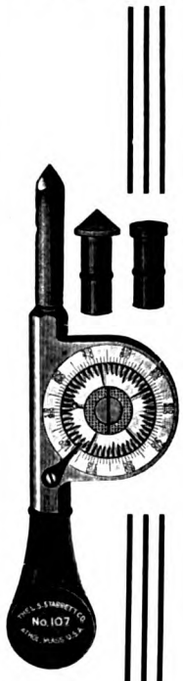
"Tycos" thermometers and pyrometers are the subject of an illustrated catalogue published by the H. & M. Division of the Taylor Instrument Companies, 843 West avenue, Rochester, N. Y. Especial attention is called to the H. & M. "Tycos" recording thermometers for condensers, feed-water lines, economizers, superheated steam pipes, flue gases, air ducts, etc. They are said to give the engineer a guaranteed accurate record of the performance of his plant. A complete line of the Taylor Instrument Companies' recorders will be sent to every marine engineer, naval architect, shipbuilder or ship owner upon request.

Searchlights for ocean, lake and river vessels are described in a catalogue published by the Carlisle & Finch Company, 234 East Clifton avenue, Cincinnati, Ohio. The statement is made in this catalogue that 90 per cent of the vessels on the inland lakes and waters of the United States and Canada are equipped with Carlisle & Finch searchlights. This company's searchlights range in sizes from 7 inches to 38 inches in diameter; the former will illuminate objects half a mile distant, and the latter at 3 miles or more. Searchlights and projectors suited to any size motor boat, yacht, steamboat or ocean liner are made by the company.

Steam whistles and whistle valves are described in a vest-pocket-sized booklet published by the William Powell Company, Cincinnati, Ohio. "In the following pages of this booklet are illustrated a complete line of whistles manufactured by the William Powell Company. These have been designed to meet the most exacting requirements in volume of tone and intensity of harmonious sound. All parts are made very strong and durable, finished by skilled mechanics, tested and adjusted to produce a clear musical tone. All are inspected rigidly before leaving the factory. We are prepared to make special whistles for compressed air service, and will be pleased to quote prices upon application. Powell whistles are now in use on locomotives, steamboats, fire engines, motor boats, traction engines, traction cars, for signal and fire alarm systems, and in most industrial power plants all over the world."

The Nicholson ship speed recorder is described in an illustrated catalogue of 28 pages just issued by the Nicholson Ship Log Company, Cleveland, Ohio. "The Nicholson ship speed recorder is a radical departure from all other types of nautical measuring devices. In addition to giving the mileage sailed, it shows the speed per hour on a dial and records this speed on a chart for every minute of the trip. These records can be dated and filed away for future reference, and should any accident or controversy occur they would furnish incontestable evidence. The successful application of the speed of the moment dial, and the record, is entirely original with the Nicholson ship speed recorder. It is, perhaps, needless to mention that this instrument shows the speed and distance through the water and not over the ground. The advantages claimed are given in detail in this catalogue."

Counting Revolutions



The accurate, *easy* way, even if the light is poor, is to use a

Starrett Speed Indicator

You don't need to watch the dial, for the knob on the revolving disc passes under the thumb at every 100 revolutions. It will indicate accurately the high speed of those turbo-auxiliaries without heating. Has rubber tips for pointed and centered shafts—won't slip.

See our various styles at hardware stores.

Our full line is illustrated in Catalog 20L.

The L. S. Starrett Co.
Athol, Mass.
36 & 37 Upper Thames St., London, E.C.
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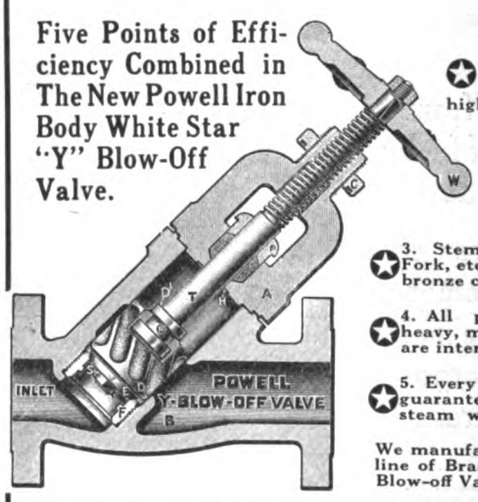
POWELL VALVES

(Especially The "White Star" Valve)

Five Points of Efficiency Combined in The New Powell Iron Body White Star "Y" Blow-Off Valve.



1. Body and Yoke cast of a select grade iron of high tensile strength.
2. Disc and seat-ring of "POWELLIUM", Non-Corrosive metal.
3. Stem, Disc - Holder, Fork, etc., cast of a steam bronze composition.
4. All parts are extra heavy, made to gauge and are interchangeable.
5. Every valve of this type guaranteed for 250 pounds steam working pressure.

We manufacture a complete line of Brass and Iron Body Blow-off Valves.

Ask your dealer for POWELL Valves, or write us.

THE WM. POWELL CO.
DEPENDABLE ENGINEERING SPECIALTIES.
CINCINNATI,

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DIXON'S GRAPHITE CUP GREASE

If you have a bearing where every other grease has failed, tell us. We'll send you a sample of the right Dixon's Grease. Try it. It's a safe bet that you'll use no other grease. Write today for that sample and Booklet No. 75 on "Graphite Cup Greases."

Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

ROBERT H. WAGER, Manufacturer of the

Wager Patent Improved Bridge Wall

For Furnaces, Marine and Stationary Boilers

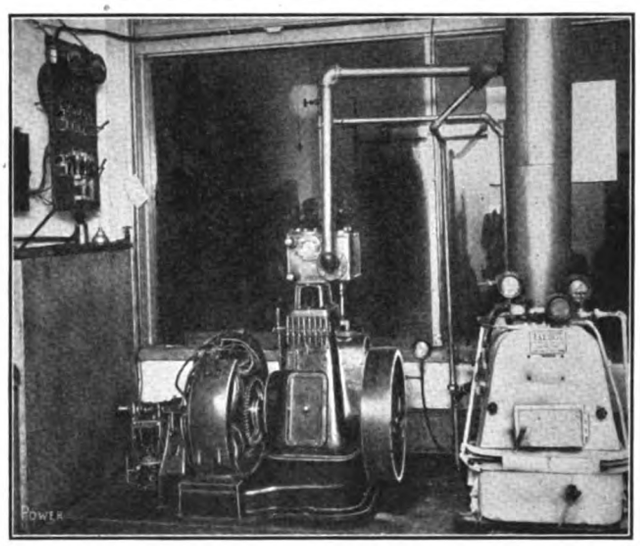
Send for illustrated Bulletin

OFFICE, 100 William St., Room 401, NEW YORK

Telephone, John 373

TALBOT

STEAM POWER PLANTS



The TALBOT Boiler in the above illustration has thirty-nine feet of heating surface and furnishes steam for driving the dynamo engine shown, lighting 240 twenty-five watt lamps and two flaming arc lamps, a load of seven and one-half kilowatts. The total cost per kilowatt hour is 1.3 cents. The Navy Department are using TALBOT Boilers in their launches.

May we send a circular? **TALBOT BOILER CO.,** **120 Liberty St. NEW YORK**

Cranes and hoists are the subject of an illustrated catalogue published by Alfred Box & Company, Philadelphia, Pa. In this catalogue are described a large number of cranes of various types used in some of the largest power houses in the country.

"The Mark Cold-Drawn Steel Union" is the title of a folder published by the Mark Manufacturing Company, Evanston, Ill. "The Mark cold-drawn steel union makes a continuous pipe; it is as strong as the strongest part of the pipe because it is of the same material; it expands or contracts with the pipe because both have the same expansive qualities; it has no blow-holes, sand-holes or other imperfections, because these are impossible in drawn steel; and, in addition, further improvements in design and method of treating eliminate absolutely leaks of any kind, corrosion or rust. A Mark cold-drawn steel union has a much longer and more efficient life. In point of service it is by far the cheapest."

"'Wolverine'—the Motor with a Bore and Stroke, Installed in Connection with Suction Gas-Producer," is the title of an illustrated circular just issued by the Wolverine Motor Company, Bridgeport, Conn. Concerning the installation of a 100-horsepower Wolverine engine and suction gas-producer in the boat *Dawn* used for towing barges loaded with logs, the following statement is made by the owner of the *Dawn:* "The difference in cost when operating on coal as against gasoline is astounding. As an instance, we cite a case where we made a tow of two barges with our 60-horsepower boat a distance of about 100 miles, the fuel cost of gasoline being $28.50. We made exactly the same tow a few weeks later with the same boat and same crew, but on producer gas the cost was but $3.50. Gasoline cost us 15 cents a gallon and coal $8.25 per 2,000 pound-ton."

"Linde Oxygen Service" is the subject of a circular published by the Linde Air Products Company, Forty-second Street building, New York. "Satisfactory results in welding and cutting depend largely upon the purity of the oxygen used. Linde oxygen, made by the liquid-air process, is of the highest purity and efficiency. Users everywhere may now obtain uniformly pure oxygen, from a convenient source of supply, whether their requirements are large or small or vary from day to day. Linde oxygen is furnished in steel cylinders containing 100 and 250 cubic feet, respectively. A large supply of charged cylinders is kept constantly on hand at all Linde plants and distributing stations ready for immediate shipment in any quantities. Linde service means no investment except for oxygen actually received—no expensive overhead or upkeep charges."

High-compression piston rings for air compressors, ammonia compressors, steam engines, pumps, motor boats, etc., are described in a folder published by the Burd High Compression Ring Company, Rockford, Ill. The manufacturer makes the following statement regarding these rings: "Burd high-compression rings require no hand fitting. They are ground to fit the cylinder with microscopic exactness. Unlike other rings, they are thus available for instant repair. They obtain their high compression in two essentials not obtained in any other ring. By reason of a scientific development of an absolutely new method of manufacture they are in perfect circle when in the cylinder. They fit the space allowed for cylinder action by fitting the grooves exactly. The new patented rust-proof bronze coupler absolutely seals the opening so that it is a perfect circle. This perfect circle can expand when necessary, still keeping its form or shape, as the compensating coupler fills the opening made, as the ends of the ring draw apart, thus giving genuine efficiency by not allowing any gas to escape or oil to intrude.

"Little David Pneumatic Drills" are the subject of Form 8107, just issued by the Ingersoll-Rand Company, 11 Broadway, New York. "In pneumatic tools more than in any other class of equipment must care be exercised to insure a combination of all-round satisfaction, owing to the hard usage to which they are generally subjected. The Little David drill embodies many unique features of construction not contained in any other machine, which appeal particularly to the user and repair man, and which greatly increase its efficiency and durability and lessen the cost of maintenance. It is a surprisingly simple tool, containing fewer parts than any other reciprocating pneumatic drill, all readily accessible. Each connecting rod interchanges in the machine, all four being identical; each piston fits any cylinder; each valve fits either chest—you simply cannot go wrong in assembling the Little David. It is this same simplicity, interchangeability and accessibility that justify fully our claim that it will require less attention from the repair man and cost less for up-keep than any other portable drill."

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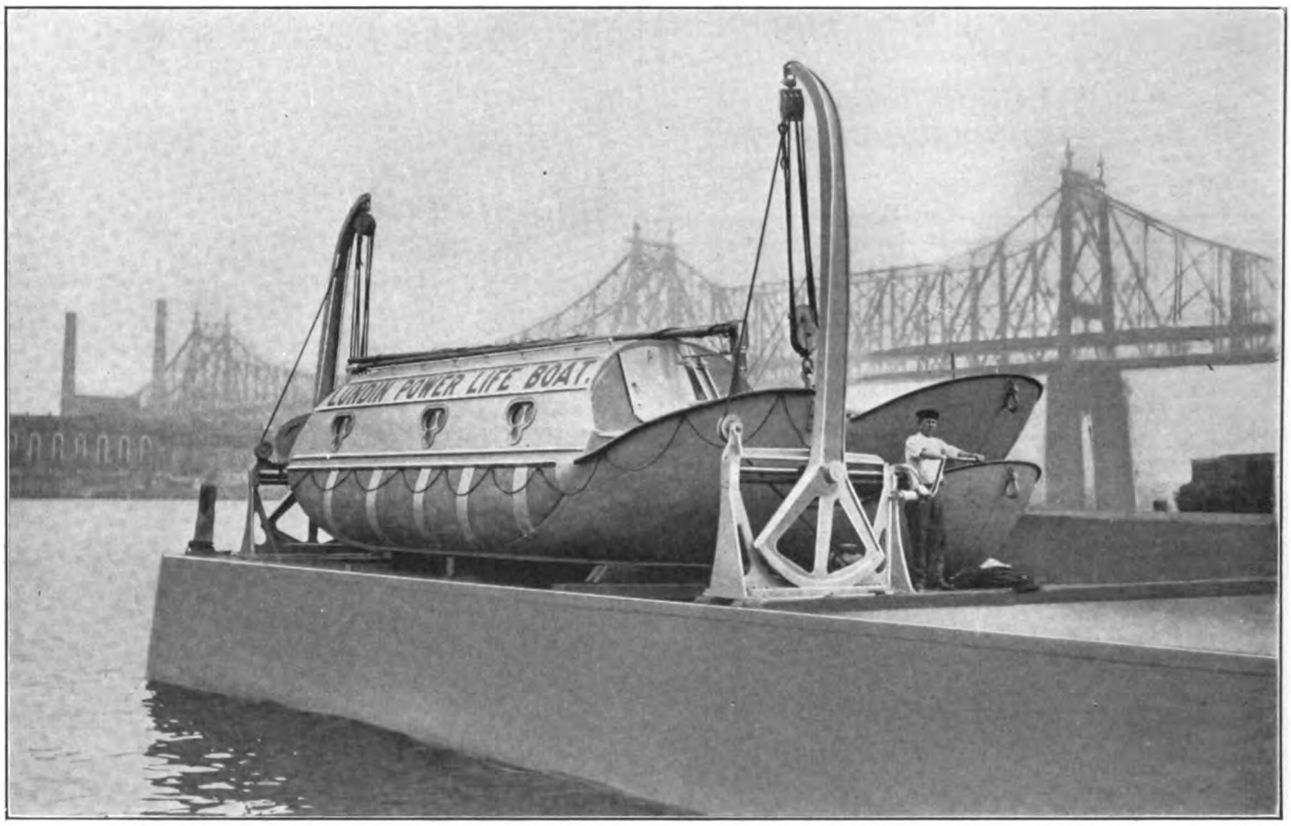
LUNDIN LIFEBOAT SYSTEM

Adopted by the United States Army Transport Service

This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to-day.



170 PERSON UNIT:—30 Ft. Lundin Power Lifeboat (outboard) 50 Persons, and Two 28 Ft. Lundin Decked Lifeboats (inboard) 60 Persons Each, Under Double Acting Welin Davits.

Let us solve your life boat problems

Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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Lunkenheimer boiler mountings are among the many marine specialties described in a catalogue of several hundred pages issued by the Lunkenheimer Company, Cincinnati, Ohio. These boiler mountings are stated to fully comply with the regulations of the United States Steamboat Inspection Service. They include valves of many kinds, such as bronze, iron "puddled" semi-steel and cast steel valves, blow-off valves, feed line stops and checks, main stop valves, water columns, water gages, fusible plugs, etc.

Boiler shop drills, reamers, flue cutters, countersinks, chucks and similar tools, are described in an illustrated catalogue of 30 pages just published by the Celfor Tool Company, Buchanan, Mich. "The Celfor Drill, manufactured only by the Celfor Tool Company, is a twisted drill made from the best high-speed steel which can be manufactured. It is of unique construction—a construction which gives it marked advantages over all other forms of high-speed drills. That it will accomplish wonderful results—better results than other high-speed drills—and that it is more durable and less costly, we are prepared to prove to those who have not already proved it for themselves. The twisting while hot, in a machine especially designed for the purpose, of a bar of high-speed steel does not impair in any sense the quality of the steel; in fact, it improves it. Tests of the torsional strength of Celfor drills show them to be 47 percent stronger than the bar of which they are made. The design of the Celfor drill is rational, in that the continuity of the fiber of the steel has not been destroyed as is necessary with milled drills, and, furthermore, the material in the drill is so disposed as to give the maximum strength for the weight of the material used. Our process of manufacturing drills produces a drill which is tough, even though it is made from a very high quality of steel. The Celfor drill may be thrown with great force against an iron block without damage to the drill. There are many drilling operations which require extra length drills. In such cases it is of the utmost importance that the drill be of a quality which will stand operating at a high temperature without a lubricant and having ample room for the escape of chips. The Celfor drill meets both of these requirements and we are called upon to furnish many special extra long drills. Celfor drills and chucks are furnished in several styles. Type A drills are equipped with straight flat shanks and are intended to be held in Celfor chucks."

Alberger centrifugal pumps are described in Catalogue "E," issued by the Alberger Pump & Condenser Company, 140 Cedar street, New York. "In making the Alberger-Curtis steam turbine for centrifugal pump drive exclusively, the Alberger Pump & Condenser Company has designed it to produce a harmonious and symmetrical pumping unit when connected to an Alberger centrifugal pump. This catalogue illustrates and describes in detail the various types of centrifugal pumps and steam turbines manufactured by the Alberger Pump & Condenser Company."

BUSINESS NOTES

AMERICA

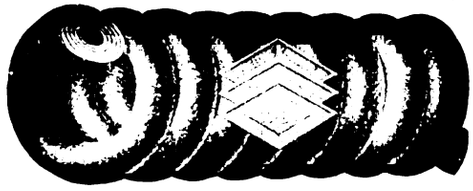
More Orders for the Brunswick Refrigerating Company.—"Since our last report the Brunswick Refrigerating Company have sold a 2-ton plant to the Luckenbach Steamship Company, of New York, for the *S. V. Luckenbach.* This makes a total of nine boats of this line now equipped with Brunswick apparatus. In connection with this plant it would be interesting to note that they received the order for installing the apparatus on Friday morning. The complete plant was shipped on Friday afternoon; delivered in New York City Saturday morning, and by working all Saturday night the plant was entirely completed and ready to run Sunday afternoon. The Mallory Steamship Company ordered a plant for its steamer *San Jacinto,* a 2-ton plant the same as was furnished for the S. S. *Neches* and *Medina.* From the Bowers Southern Dredging Company, of Galveston, Tex., the Brunswick Company has received orders for 1-ton plants for the dredges *Sam Houston* and *San Jacinto,* now building at Galveston for the United States Government. These two dredges make a total of thirty-four vessels of the Government now equipped with Brunswick apparatus. There are now 196 vessels of all types equipped with Brunswick apparatus. As some of these ships have two, and some even three, compressors, there are a total of 226 compressors on these boats. The Brunswick Refrigerating Company will be very glad to furnish literature and information regarding their apparatus on application at the main office in New Brunswick, N. J. A refrigerating plant to-day has become a necessity on board ship, and not only is it a necessity but a great money-saver."

COBBS HIGH PRESSURE SPIRAL PISTON

AND

VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

NEW YORK BELTING AND PACKING CO.

91 and 93 Chambers Street, NEW YORK

LONDON, E. C., ENGLAND, 11 Southampton Row

CHICAGO, ILL., 130 West Lake Street
ST. LOUIS, MO., 218-220 Chestnut Street
PHILADELPHIA, PA., 821-823 Arch Street
SAN FRANCISCO, CAL., 129-131 First St., Oakland
BOSTON, MASS., 232 Summer Street
PITTSBURGH, PA., 420 First Avenue
PORTLAND, ORE., 40 First Street
SPOKANE, WASH., 157 S. Monroe Street

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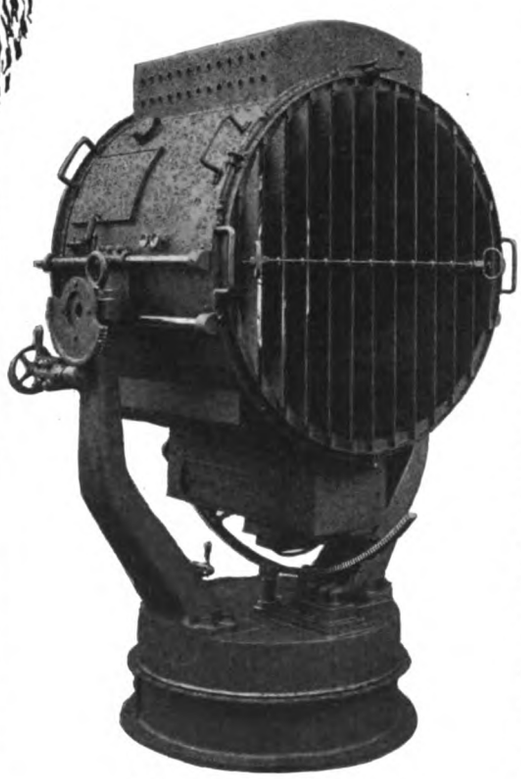
MESSRS. SIEMENS BROS. & COMPANY, LTD., Woolwich, London, S. E., write INTERNATIONAL MARINE ENGINEERING that the employees of their works have contributed the sum of £460, which has been handed over to the Mayor of Woolwich for forwarding to the Prince of Wales' Fund.

ONE HUNDRED AND ONE PERCENT VACUUM.—"Within recent years engineers have been striving for higher and higher vacuums, but it is only recently that the feat of obtaining a vacuum 1 percent higher than the theoretical has been accomplished. A recent test made in the hydraulic laboratory of the Wheeler Condenser & Engineering Company, Carteret, N. J., on one of the company's turbo air pumps, showed vacuums considerably higher than the theoretical for quantities of air up to about 20 cubic feet of free air per minute when the vacuum fell to the 100 percent or the theoretical. An explanation advanced by their engineering department is that the hurling water passing through the pump is subjected to a cooling effect caused by the high vacuum, and this reduces the temperature of the water, also reduces the vapor tension and increases the vacuum obtainable.

INCREASING BUSINESS IN AUTOMATIC CIRCULATORS.—Mr. James C. Eckliff, vice-president of the Eckliff Automatic Boiler Circulator Company, Detroit, Mich., writes INTERNATIONAL MARINE ENGINEERING as follows: "Business was very poor for a couple of months but quite recently it has shown marked improvements. As a result of the installation in the steamer *Suffolk*, of the Coastwise Transportation Company, Captain Crowley has placed an order with us for two boilers in the steamer *Middlesex*, and the circulators have been shipped and will be installed some time this month. We have also received an order from the Navy Department to equip three double-ended boilers of the U. S. S. *Dixie*. We have on hand orders to equip the U. S. dredge *Burton* and the tug Spear, stationed at Cleveland, Ohio, and four boilers in the steamer *Eastland* of the St. Joseph-Chicago Steamship Company are being equipped with our circulators and purifiers. We are daily expecting to receive an order from the Staten Island Shipbuilding Company for circulator equipment of eight boilers in the tugs building for the Isthmian Canal Commission. These circulators were specified by the designer of the tugs, and we have forwarded blue print showing representative installation for their approval."

A DRY JACKET SOOT BLOWER for watertube boilers has been put on the market by the Diamond Power Specialty Company, 58 First street, Detroit, Mich. This company makes the following statement regarding its soot blower: "Much time and money has been spent by the manufacturers of soot blowers to perfect a blower for watertube boilers, the units of which could withstand the high temperature without having to be replaced at short intervals. After extensive tests and researches a wholly efficient blower for this type of boiler has been perfected and the results from its use have been highly satisfactory. The units of this soot blower system, which are exposed to a deteriorating temperature, are made of two wrought iron tubes—one within the other—the outside tube being 3½ inches in diameter. The space, ½ inch, between the inner and outer tubes is filled with a specially prepared compound, made from a secret formula, which contains wonderful heat-resisting qualities. These units are baked in ovens at an extremely high temperature for specific periods until the compound becomes hardened and tile-like in formation. This material is pressed very tightly around the inner tube at all times, and forms a heat resistant and insulator the equal of which has yet to be found. Thus the inner tube never becomes red-hot, even in the hottest furnaces. There are several other features about this new device that are worthy of note. Each unit revolves on its bearings, thus directing the steam into every crevice where soot may be lodged. Each unit is equipped with patented steel expansion nozzles, which force the steam into the midst of the tubes with an enormously increased velocity over that which could be obtained by the use of an ordinary nozzle. The velocity of the steam issuing from these jets is estimated to be 2,500 feet per second, and yet no more steam is used than with an ordinary opening of the same size. This new soot blowing system does away with the necessity of opening doors to clean the boiler, thus the boiler is kept air-tight during the cleaning process. The units that are not within reach are all operated by sheave wheels and chains from the floor, making it unnecessary to climb ladders to operate the blowers. The engineers who have perfected this new system have even gone so far as to determine in dollars and cents the difference in cost between the cost of cleaning a boiler by hand and the cost of cleaning by the mechanical device."

ELECTRIC SEARCHLIGHTS.



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Walter B. Snow, publicity engineer, has removed his offices from 170 Summer street to rooms 511-516, 136 Federal street, Boston, Mass.

The McMyler Interstate Company, Bedford, Ohio, has appointed Jesse C. Bader in charge of the company's Western sales branch, with offices at 1503 Fisher building, Chicago, Ill.

Orders for Ross Schofield Circulators.—The Ross Schofield Company, 17 Battery Place, New York, announces the completion of the installation of the Ross Schofield system of circulation in the Scotch marine boilers of the new T. S. S. *Britannic* of the White Star Line. This vessel has 24 double-ended and 5 single-ended boilers, a total of 159 furnaces. The Luckenbach Steamship Company, 8 Bridge street, New York, have recently signed a contract for the equipment of the boilers of its entire fleet with the Ross Schofield system of circulation.

Automatic Sprinklers on Steamship Piers.—According to the Grinnell Automatic Sprinkler Company, Providence, R. I., the use of Grinnell sprinklers on steamships and piers is rapidly increasing. "One of the most interesting sprinkler installation made recently by this company is that installed in the new State Pier at Providence, R. I. Plans for this system were laid out by Mr. C. B. Mackinney, of Starkweather & Shepley, and our Mr. R. A. Jenckes. The whole system was installed to the approval of W. D. Bullock, chief engineer of the State Harbor Improvement Commission. The system contains some features which are unique in sprinkler work, it being found necessary on account of the length of the pier (400 feet) and its location, to make certain elaborations on the usual dry pipe method of installation. The water supply to the system is taken from city water, and, of course, the supply main for some distance from the shore is exposed to the weather. Further than this, it was deemed inadvisable to place all of the dry pipe valves at the shore end of the pier, on account of the unusually long runs of air piping which such a location would have demanded. Two dry pipe valves were therefore installed near the shore end of the property and two were installed in a valve house near the end of the dock. In order to get water up to these valves without danger of freezing a plan was devised whereby the water in the supply mains is kept above freezing by an independent hot water heating forced circulation system."

The Reilly multi-screen feed-water filter and grease extractor and the Reilly standard marine feed-water heater, made by the Griscom-Russell Company, 90 West street, New York, have recently been installed on dredges owned by the Canadian Stewart Company in connection with Toronto harbor improvements. The Griscom-Russell Company sends International Marine Engineering the following article relating to these installations: "In order to properly take care of the requirements of the increasing ship-building operations in Canada, many new plants for supplying marine auxiliaries are being established, so that the most suitable style of equipment may be offered for each vessel and spare parts furnished at short notice. Among the new manufacturing plants recently constructed is that of the Canadian Griscom-Russell Company, which manufactures in its shop at Montreal a complete line of Reilly marine specialties, such as feed-water heaters, salt-water evaporators, filters and grease extractors, along similar lines to those of the Griscom-Russell Company, of New York. One of its recent contracts was for two Reilly multi-coil feed-water heaters and two Reilly multi-screen feed-water filters and grease extractors for the Canadian Stewart Company's dredges operating in connection with the Toronto harbor improvement. The heating surface of these heaters consists of forty-seven coils of seamless drawn copper tubing, of small diameter, which are connected to top and bottom manifolds, with copper-to-copper unions, which require no packing and allow easy removal of any coil. A large door in the heater shell gives ready access to the heating surface without breaking pipe connections. On large dredge work, as well as in other marine uses, it is desirable to have an efficient filter, so that the boiler feed water will be free from sand and other impurities stirred up in the surrounding water by the action of the dredge, and as surface condensers are usually installed on large dredges it is important to have an efficient grease extractor to remove oil and grease from the water in the hot well before feeding the condensate to the boiler. An essential part of any filter is accessibility to the filtering medium and simplicity in cleaning. This cleaning is accomplished in the Reilly filter by a large bottom blow-off for the heavy precipitate and surface blow-off for oil and grease. When it is desired to remove the cartridges, they are readily withdrawn through a large manhole in the top of the shell, and may be boiled in soda for a thorough cleansing of the filter material."

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of highest efficiency and reliability resulting from 19 years of experience; over 3,000,000 hp. built and building.

REDUCTION GEARS
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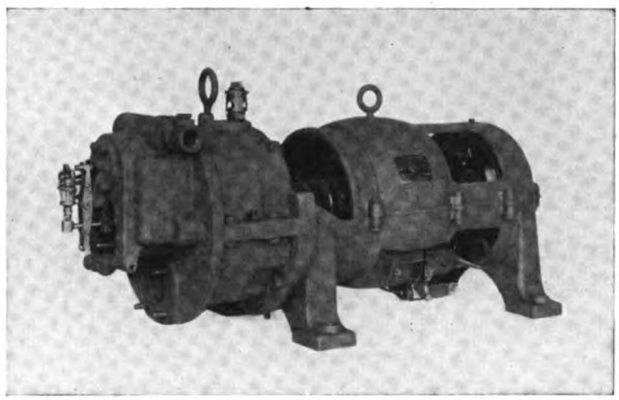
BRIDGE CONTROL
for operating main turbine from bridge. Instantaneous operation, avoids confusion and accidents. Found satisfactory in test by Navy Department



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A most efficient and reliable direct-current unit for moderate and large power.

CONDENSING PLANTS
for main turbine and turbo-generator. Exceptionally high vacuum maintained. Ideal units for marine turbine service.

CONDENSER PUMPS
High efficiency air, circulating and condensate pumps. Westinghouse-Leblanc Air Pump produces highest obtainable vacuum. No loss of fresh water.

CENTRIFUGAL PUMPS
of all sizes for high and low pressure service. Boiler-feed and fire pumps; turbine or motor driven. These pumps are simple and rugged and very reliable.

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of all sizes for ventilation and forced draft. Turbine or motor driven. Horizontal or vertical type. Strong, compact and efficient.

AIR FURNACE IRON CASTINGS
of all sizes made in a thoroughly modern foundry. Large castings and turbine cylinders a specialty.

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Two high grade men with selling experience and a knowledge of boiler room equipment to represent a well-known concern manufacturing specialties for marine boilers. A big opportunity for men who can qualify. Give full details and references in first letter.

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INTERNATIONAL MARINE ENGINEERING,
17 Battery Place, New York

NEW INSTALLATIONS OF BABCOCK & WILCOX BOILERS.—The Babcock & Wilcox Company, 85 Liberty street, New York, writes INTERNATIONAL MARINE ENGINEERING that it is now installing its boilers in the following vessels: U. S. battleships *Oklahoma, Pennsylvania* and *Arizona;* U. S. torpedo boat destroyers *O'Brien, Nicholson, Winslow, Conyngham* and *Porter;* U. S. fleet oilers *Kanawha* and *Maumee;* U. S. revenue cutter *Seminole;* U. S. army dredges *San Jacinto, Sam Houston* and *San Pablo;* two large hydraulic dredges for the Canadian Stewart Company, *Cyclone* and *Tornado;* Southern Pacific ferryboat for San Francisco, *San Pablo;* two passenger vessels for Pacific Coast, *Great Northern* and *Northern Pacific;* new passenger and cargo vessels for Charles R. McCormick & Company, San Francisco, this being the tenth consecutive order for Babcock & Wilcox marine boilers from this company. Babcock & Wilcox boilers are fitted in the new New York fireboat *William J. Gaynor,* which is now ready for delivery. The Babcock & Wilcox Company has also received a large order for oil burners for the U. S. battleship *Pennsylvania,* which will burn oil exclusively.

THE INDEPENDENT PNEUMATIC TOOL COMPANY, 1307 Michigan avenue, Chicago, Ill., has appointed F. J. Passino the company's representative in the Southwest, to succeed Mr. H. F. Finney, promoted to a position in the general sales office in Chicago.

THE INDEPENDENT PNEUMATIC TOOL COMPANY has also appointed V. W. Robinson its representative in Michigan, with headquarters at Detroit.

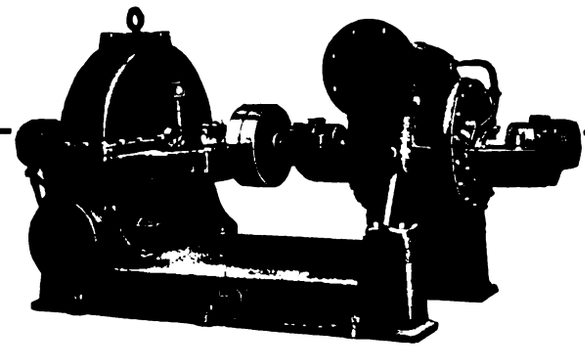
GOVERNMENT ORDER FOR LOCOMOTIVE CRANES.—The Link-Belt Company, Chicago, Ill., has just received an order from the United States Navy Department for four steam-operated revolving locomotive cranes. Three of these cranes will be used at the Philadelphia navy yard, and the fourth at Charleston, Md. These locomotive cranes are all of the company's standard 8-wheel type, with slight modifications to conform with the Government's specifications.

TRADE PUBLICATIONS

GREAT BRITAIN

The nautical instrument advertisements of Heath & Company, Ltd., The Observatory Works, Crayford, London, to be published in *Brown's Almanac* for 1915, have been gathered together in pamphlet form by Messrs. Heath & Company. As this firm is one of the most prominent manufacturers in the world of nautical instruments, the pamphlet in question should be of great value to any one intending to purchase such instruments. We understand that a copy of the pamphlet will be sent to any of our readers upon request.

"The Magnet of Commerce" is the title of a profusely illustrated booklet of 144 pages published by Sir Sam Fay, general manager of the Great Central Railway Company, 216 Marylebone Road, N. W., London. In the back of this book is also a large map printed in several colors, entitled "The Great Central Railway Company's Colliery and Industrial Map." This shows the chief manufacturing towns reached by the Central Railway, the manufacturing districts, the agricultural lands and coal fields, and gives much further information of interest.



Centrifugal Pumps

are described in *Bulletin 19 H just off the press,* also

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IMPORTANT ARTICLES

PUBLISHED IN

INTERNATIONAL MARINE ENGINEERING

JULY, 1914

The New Cunard Express Liner Aquitania. Illustrated.
Steamships President and Governor Changed to Oil Burners.
The Submarine Tender Fulton. Illustrated.
The Empress of Ireland Disaster. Illustrated.
New Steamship Piers at Boston. Illustrated.
Honolulu Floating Dry Dock. Illustrated.
Westinghouse Turbine Reduction Gear. Illustrated.
The British Board of Trade Experimental Bulkhead Tank. Illustrated.
Motor-Driven Tank Vessel Avon. Illustrated.
How Marine Engineers Can Make Money.—I. Illustrated.
The Rational Non-Diesel Marine Oil Engine.
Care of the Electric Plant on Board Ship. Illustrated.
Watertight Subdivision of Ships and the Effect of Bilging.—III. Illustrated.
Gatun Hydroelectric Development for the Panama Canal.
The Passing of the Clipper Stem. Illustrated.
Side Wheel Steamer Hanover. Illustrated.
Freight and Passenger Steamer Pelee. Illustrated.
An Oil Burning Tug.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Practical Marine Engineers:
- Water Levels and Gage Cocks.
- Old-Time Methods.
- Cylinder Lubrication.
- Friction.

AUGUST, 1914

The Construction of Steel River Barges. Illustrated.
Repairs to Scotch Marine Boilers with Oxy-Acetylene Apparatus. Illustrated.
Steamer Alvarado. Illustrated.
The Loading and Steering of Lake Vessels.
Danger of Handling Heavy Weights in Cold Weather with Chain Slings.
Great Lakes Bulk Freight Steamer. Illustrated.
The Manchester, A New Harbor Express. Illustrated.
New Bush Terminal Pier. Illustrated.
The Chesapeake and Ohio Railway Company's New Coaling Pier at Newport News. Illustrated.
Twin Screw, Oil-Burning Tug Joseph Seep. Illustrated.
New Excursion Steamer Mandalay. Illustrated.
Care of the Electric Plant on Board Ship. Illustrated.
Design of Self-Propelled Barge for the New York State Barge Canal. Illustrated
The Westinghouse System of Bridge Control. Illustrated.
The Present Position of the Marine Gasolene Engine. Illustrated.
Economy Talks by "Old Scotch."
The Watertight Subdivision of Ships and the Effect of Bilging.—IV. Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters From Practical Marine Engineers:
- An Air Pump Breakdown. Illustrated.
- Let Well Enough Alone.
- A New Method of Obtaining "Offsets." Illustrated.
- An Emergency Pump.

SEPTEMBER, 1914

New Freighters for the Panama Canal Trade. Illustrated.
Lundin Power Lifeboat Equipped for Voyage Across the Atlantic. Illustrated.
Aero Automatic Fire Alarm. Illustrated.
Producer Gas Towboats. Illustrated.
New Mallory Line Freight Ships. Illustrated.
Bolinder's Direct Reversible Marine Oil Engine. Illustrated.
The Talbot Marine Watertube Boiler. Illustrated.
Lengthening the Steam Yacht Cyprus. Illustrated.
The Boston Fish Pier. Illustrated.
The Harris Heavy Oil Marine Engine. Illustrated.
Protection of Battleships Against Submarine Attack.
The Watertight Subdivision of Ships and the Effect of Bilging.—V. Illustrated.
Economical Method of Handling Freight. Illustrated.
Steel Derrick Barges for the Pennsylvania Railroad. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Freight Handling Appliances at Marine Terminals.
Letters from Practical Marine Engineers:
- A New Trick in Trick Valves. Illustrated.
- Poorly Designed Eccentrics. Illustrated.
- A Leaky Condenser. Illustrated.
- Repairing A Yoke on Throttle Valve. Illustrated.
- Engine Room Bulkheads.
- Flow of Air Through an Aperture.

OCTOBER, 1914.

Geared Turbines for Propelling Vessels. Illustrated.
The New Niclausse High-Duty Marine Boiler. Illustrated.
A Reprieve for the Big Fore-and-Afters.
A New 10,000-Ton Japanese Mail Steamer. Illustrated.
Boston's Square Riggers.
Alteration of Ferryboat Pittsburgh.
The Development of Mechanical Gearing for Marine Turbine Machinery. Illustrated.
The Determination of Dimensions of Cargo Ships. Illustrated.
Steel Storage in Shipyards. Illustrated.
The Triple Screw Liner Statendam.
The Cummings Engine Log System. Illustrated.
A New Type of Internal Combustion Engine. Illustrated.
An Economical Fueling Lighter. Illustrated.
The Mersey Bar Lightship Alarm. Illustrated.
New French Liner for West India Service. Illustrated.
A Diesel-Engined Tank Schooner. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Steam Lighter America.
Inlets Disastrous to Seagoing Steamers.
Letters from Practical Marine Engineers:
- Is the Turbine a Steam Hog?
- Repairs to Feed Water Heater. Illustrated.
- Faulty Designing of Boilers.
- Boilers and Scale.
- Salt in the Fireroom.

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Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

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58 Romford Road, Stratford, London, E.

"The Ozonair System of Pure Air Ventilation" is the title of a profusely illustrated catalogue issued by Ozonair, Ltd., 96 Victoria street, Westminster, S. W. "The ventilation of ships is always a difficult proposition. Owing to the small cubic space at disposal, and the low ceiling, it is almost impossible in the ordinary way to prevent drafts if anything like the usual change of air is attempted. Ozone ventilation is, therefore, peculiarly adapted for use in all parts of ships and railway dining cars, etc. It also deals effectually with the peculiar, and to some people disagreeable, odors found in these places. For the private cabin nothing can be more delightful than an Ozonair fan. In the case of mountain railways, ozone is found to be a valuable specific for heart weakness caused by the high altitudes to which these ascend."

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A Gasket blew out of a flange on a steam line, and he replaced it.

Blew out again.

Replaced it with a metal gasket.

Wouldn't keep tight.

Found a "SCRAP" of RAINBOW in the bottom of a locker—tried that.

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TRADE PUBLICATIONS.

AMERICA

Small indicating instruments for direct current are described in Bulletin No. 8, a copy of which will be mailed free by the Weston Electrical Instrument Company, Newark, N. J., to any of our readers upon request. This company's portable voltmeters, mili-voltmeters, volt-ammeters, ammeters and mil-ammeters are supplied in single, double and triple ranges. The triple range volt-ammeter comprises six instruments in one. The Weston Electrical Instrument Company has also put on the market a new line of switchboard volt-meters, volt-ammeters, ammeters and mil-ammeters, which it states represent the finest development of small-size pivoted moving coil, permanent magnet type of instruments. The several models and ranges offer a selection from over 300 different combinations, all of which are listed in Bulletin 8.

"Dixon's Silica-Graphite Paint in Brazil" is the title of one of the articles in the October issue of *Graphite,* issued by the Joseph Dixon Crucible Company, Jersey City, N. J. This article is illustrated, and tells about some galvanized iron dock sheds which have been painted with Dixon's silica-graphite. "Para is the chief port of North Brazil and the Amazon, and it gives its name to the vast exportations of Amazon rubber. Into this field the Dixon Company went many years ago, through its London agents, Graphite Products, Ltd. The photograph shows the great port of Para and eight of the galvanized iron dock sheds of the Para Construction Company. The Amazon River Steam Navigation Company were the owners of some galvanized sheds at Para, which were taken over by the Para Construction Company in 1909, and which had been standing for some twenty years before that date and had been protected with Dixon's Silica-Graphite Paint during the whole of that time. Five similar sheds, and two double-deck sheds not shown in this photograph, altogether fifteen cargo sheds of the Para Construction Company at Part, Brazil, are now protected with Dixon's Silica-Graphite Paint. The success of Dixon's Silica-Graphite Paint in tropical and semi-tropical countries, in both the Eastern and Western Hemispheres, has long been established, and this is just one illustration out of the very many of important structures upon which it has rendered the longer and economical service which the Dixon Company advertises. Humidity and heat have no terrors for Dixon's Silica-Graphite Paint."

The K. C. Monteagle patent piston and piston valve packing for all engines, pumps, compressors, etc., is described in a catalogue which has just been published by the Lockwood Manufacturing Company, 61 Sumner street, East Boston, Mass. The Lockwood Manufacturing Company also builds steamships, towboats, marine engines and boilers, and makes a specialty of repairing hulls and machinery.

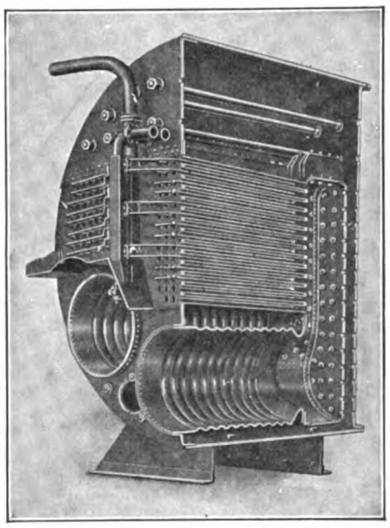
In Re Male and Female "Kewanee" Unions.—According to a circular published by the National Tube Company, Pittsburg, Pa., "one of the most economical and useful fittings ever placed on the market is the male and female pattern Kewanee union. As its name implies, this union has a male end and a female end combined with the well-known Kewanee advantages. By its use the following saving is effected: One nipple; time required for making one less joint; one gasket; time required for cutting and fitting gasket; cost of one malleable union. Or, in other words, an average net saving of 16 cents. Probably some of your readers are not acquainted with this type of Kewanee union and its merits. At their request we shall deem it a pleasure to forward any of them a copy of the male and female Kewanee union circular."

"Steel Chains" is the title of book No. 124 just issued by the Link-Belt Company, Chicago, Ill. "In manufacturing the steel chains presented herewith, we have made it a point to consider carefully every detail of design, material and construction, with a view to furnishing the best article for the purpose at the lowest practicable price. Without wasting expense on useless outside finish for appearances, we have taken advantage of every facility our experience, modern equipment and skilled workmanship can supply, to furnish a product which will have truer, smoother, harder, and thus more durable, bearing surfaces. By careful specification of the grade of stock purchased for the different parts, we have secured a maximum of strength and durability in the chain as a whole, without material increase in the cost. In the tabulated matter we have endeavored to furnish useful information as to details of size and construction, and where a size of chain is not illustrated in the booklet, we furnish information on separate sheets. In the classification of 'SS' chains we distinguish between offset and straight side bars, and the use or omission of bushings, rollers or pins, as shown in tabulated matter on pages 16 to 25, and illustrations on pages 4 to 11. The chains are listed in the order of their strengths, and for convenience of reference we give a numerical index on page 15."

SCHMIDT FIRE TUBE SUPERHEATER
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

SEND FOR OUR CATALOGUE [A]

LOCOMOTIVE SUPERHEATER COMPANY, 30 CHURCH STREET, NEW YORK
PEOPLES GAS BLDG., CHICAGO

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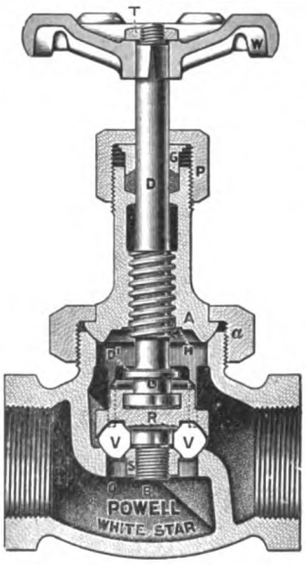
The installation of "Sirocco" blowers at the Detroit and also at the Canadian plant of the Ford Motor Company is described in an illustrated pamphlet just published by the American Blower Company, Detroit, Mich. This 'Sirocco' installation is the largest of its kind ever made. It is unique in that the only other places where air distribution is handled in a similar manner are at the Ford Canadian plant and a huge machine shop in Baltimore, for which the American Blower Company is now building the heating and air conditioning equipment. This latter contract was placed after an inspection of the Ford plants."

"A Proclamation Prompted by the European War" is the title of a leaflet just published by the Schaeffer & Budenberg Manufacuring Company, Brooklyn, N. Y. In this leaflet the company states that, while its home office is in Germany, the manufacturing organization and facilities of its plant in the United States are complete in every way, as they are also in its English, French, Russian and other European plants. The leaflet accompanies the company's new catalogue, which states: "In this pamphlet we acquaint you with our line of 'instruments for the promotion of efficiency and economy in the power plant and other manufacturing departments of the modern industrial plant.' Every instrument shown is designed and constructed with the aid of an accumulated knowledge gained by over sixty years of study, experimenting and practical experience in solving problems of temperature, pressure, speed, etc. Only the best of materials is ever used. In our plant here in the United States (where all the instruments shown in this pamphlet are built), we maintain a manufacturing organization that is complete in every way. Our men are experts, all thoroughly schooled in the art of instrument making. Our engineering department is perfectly capable, and always willing, to solve any special problem that may confront you. We invite correspondence."

"National" marine and stationary boiler tubes and the many tests to which they are subjected before being placed on the market, are the subject of Bulletin No. 16, published by the National Tube Company, Frick building, Pittsburg, Pa. This bulletin should be in the hands of every one of our readers who is at all interested in the subject, and a copy will be sent free upon request. We quote as follows: "The question of the life of a boiler tube is acknowledged to be of vital importance to every user. The metal used in the manufacture of National boiler tubes is a special grade of weldable boiler tube steel, manufactured by refining the best ore, taken from the Missabe ore ranges in the Superior district. This ore is reduced by an improved plant, which mechanically produces a good, pure, uniform quality of metal without the necessity of dependence upon human labor. By National Tube Company's methods of reduction practically all impurities are removed, so that the metal is nearly pure iron, free from intermixed cinder, the carbon content does not vary more than .01 per cent in a year's work. The metal has sufficient stiffness to hold tight in the flue sheet, and at the same time has abundant ductility. While it is a fact that feed water shows a steadily increasing amount of corrosive matter, yet we are led to the conclusion, through our lengthy and careful experiments, that the deterioration in service is largely due to the inferior quality of the raw material used in the manufacture of the ordinary boiler tube. All National boiler tubes are subjected to rigid inspections and tests. Flattening test—A section three (3) inches long must stand hammering flat, cold, until the inside walls are within three times the thickness of the material without cracking at the bend or elsewhere. In the case of lap-welded tubes for marine work, the bend at one side will be made in the weld. Flanging test—For marine purposes on lap-welded tubes, four (4) inches and smaller, and on all sizes of seamless tubes, a flange three-eighths (3/8) of an inch wide will be turned over at right angles to the body of the tube without showing crack or opening at the weld. Internal-pressure test—Each tube is subjected by the manufacturer to an internal hydrostatic pressure for the respective size and gage, as given in table of dimensions, weights and test pressures. (See National Bulletin No. 16.) Each boiler tube is also given a very careful inspection and examination in order that it shall have a reasonably smooth surface, be free from injurious pits, laminations, cracks, blisters or imperfect welds, bends, buckles, signs of unequal contraction in cooling or injury during manufacture. It is a fact that the steel tube is rapidly replacing other tubes on account of quality, less liability to corrosion and pitting, and much lower price. National Tube Company is satisfied that either National lap-weld spellerized steel boiler tubes, or Shelby seamless steel (cold-drawn or hot-finished) boiler tubes will give, at a decreased cost, better service than the early type of boiler tube."

POWELL VALVES
(Especially The "White Star" Valve)



We manufacture a complete line of
GLOBE VALVES
ANGLE VALVES
CROSS VALVES
GATE VALVES
AND
CHECK VALVES
BRASS AND
IRON BODY
SCREW AND
FLANGED ENDS
Ask your dealer for "Powell" Valves—or write us.

THE WM. POWELL CO.
DEPENDABLE ENGINEERING SPECIALTIES.
CINCINNATI, O.

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DIXON'S FLAKE GRAPHITE

Used with oil or grease, this substitutes the gliding of graphite on graphite for the grinding of metal on metal, in the bearings. It is the perfect, natural lubricant. Send for "A Study In Graphite," No. 75.

Made in JERSEY CITY, N. J., by the

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ROBERT H. WAGER, Manufacturer of the

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For Furnaces, Marine and Stationary Boilers

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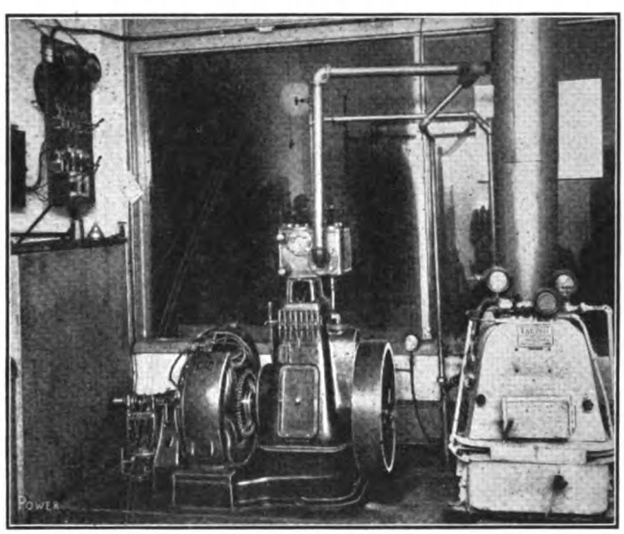
TALBOT

STEAM POWER PLANTS



The TALBOT Boiler in the above illustration has thirty-nine feet of heating surface and furnishes steam for driving the dynamo engine shown, lighting 240 twenty-five watt lamps and two flaming arc lamps, a load of seven and one-half kilowatts. The total cost per kilowatt hour is 1.3 cents. The Navy Department are using TALBOT Boilers in their launches.

May we send a circular? **TALBOT BOILER CO.,** **120 Liberty St. NEW YORK**

Condensing equipments for marine service are described in Bulletin 18, issued by the Alberger Pump & Condensing Company, 140 Cedar street, New York. For these outfits the manufacturer claims unusually high efficiency, combined with light weight, making the Alberger spiroflo surface condenser the ideal type for marine service. "The spiroflo construction of this apparatus is the first radical improvement in condenser design since the days of Watt."

"Electric Hoists for the Efficient Handling of All Loads" is the title of a folder just issued by the Sprague Electric Works, 527 West Thirty-fourth street, New York. "Sprague electric hoists are designed to satisfy the demand for efficient lifting and carrying devices to fill the gap between the hand-chain block and the large traveling crane. They range in capacities from ½ to 6 tons. They are built of high-grade material by skilled workmen. They save time and labor. Complete information cheerfully furnished without obligation."

Boiler expanders and other boiler shop tools are described in Catalogue 32, published by the J. Faessler Manufacturing Company, Moberly, Mo. Any Faessler tool will be sent on sixty days' free trial. The company states in reference to the Faessler "Boss" roller expander that besides being the safest and most durable sectional expander made, it is also the quickest. "With it one man can easily do what requires two with an ordinary expander, and, what is more, the one man can do twice as much work as the two can do. In other words, the one man does the work of four, which makes this tool quickly pay for itself."

"Accomplishes More Than Anticipated" is the title of a circular just published by the Hardsocg Wonder Drill Company, Ottumwa, Ia. This circular refers to the "Wonder" riveting machine, and states that about September 1 the company sold one of its 12-foot gap "Wonder" riveting machines to a firm in Racine, Wis., whose name will be given to anyone interested enough to write and ask for it. The letter is as follows: "Replying to your favor of the 19th, in regard to the riveter which you recently furnished us, we will say that we are more than pleased with the work of this riveter. The machine certainly does fine work and accomplishes more than we anticipated that it would."

A valuable rotary shear for use in boiler shops is described in Catalogue 50 just issued by H. Collier Smith, 807 Scotten avenue, Detroit, Mich. This is Mr. Smith's type 4 "Quick-work" rotary shear, which cuts ⅜-inch thick steel to reverse curve radii of 4½ inches, or a 9-inch diameter hole without cutting in from the side of the sheets. It will cut any lighter gage to proportionately smaller radii; cuts 3-inch radius in 3/16-inch stock in reverse or serpentine curves. The depth of throat of this machine is 30 inches, and it is provided with three changes of speed, instantly controlled by the rear lever. Mr. Smith states that the machine can be started and stopped instantly at any point of the cut by means of a clutch handle.

"Concerning the Removal of Scale in Locomotive Boilers" is the title of one of the articles in the September issue of *Graphite,* and the following statement is made regarding the illustration in connection with this article. Dixon's boiler graphite is also stated to be especially useful on board ship: The above presentation of what happens in the boiler of a locomotive after it has been treated with Dixon's boiler graphite is graphic enough for even the few engineers who still cling to the fashion way of removing scale from boilers. This illustration in connection with the following text is from the *Railway Gazette,* the London edition of the *Railway Age Gazette:* 'Everyone knows that to some extent all undistilled waters used for feeding steam boilers contain impurities, either in suspension or in solution. Everyone knows, too, just what happens when the impurities collect on the boiler shell and tubes in the form of scale or soft mud. In sufficient quantities the deposit will affect the steaming properties or even seriously imperil the safety of the boiler. Graphite of the right kind will prevent the firm adherence of scale on the surfaces of the shell or tubes of a boiler. The action of graphite, such as Dixon's Boiler Graphite No. 2, is not chemical; it does not dissolve the scale nor does it attack the metal, as is often the case with strong compounds; neither is it affected by any acids in the water nor by the heat generated in the boiler. The particles of graphite simply work into the minute cracks existing in the old, hard scale, and gradually penetrate between the scale and the metal. The scale thus loosened may be rapped off or otherwise removed without trouble. A piece of scale so removed from a boiler of an English railway locomotive is illustrated herewith. Further scale cannot adhere firmly to the metal again so long as the graphite treatment is continued, the graphite becoming thoroughly intermixed with new scale as it forms, rendering it soft and crumbly.'"

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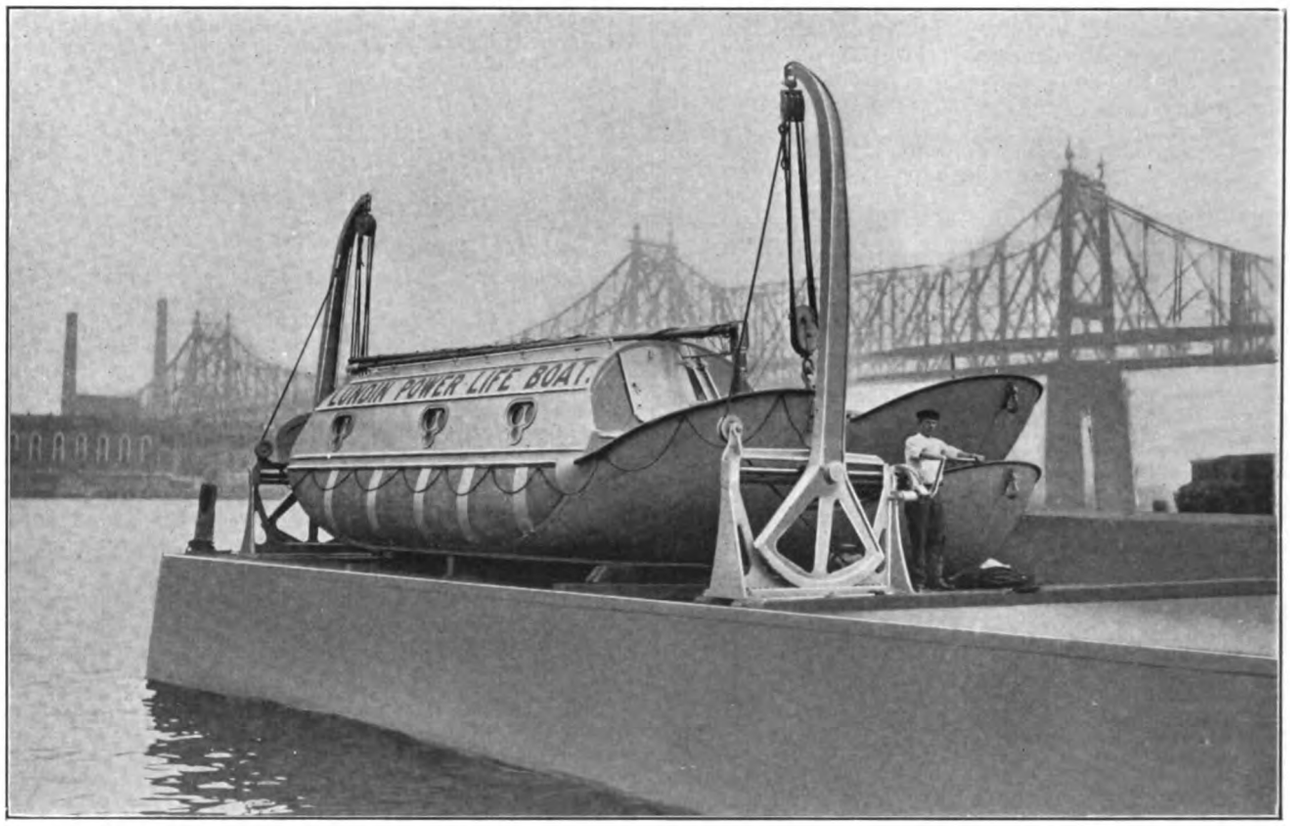
LUNDIN LIFEBOAT SYSTEM

Adopted by the United States Army Transport Service

This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to-day.



170 PERSON UNIT:—30 Ft. Lundin Power Lifeboat (outboard) 50 Persons, and Two 28 Ft. Lundin Decked Lifeboats (inboard) 60 Persons Each, Under Double Acting Welin Davits.

Let us solve your life boat problems

Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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Economy in purchase of rope is the subject of a circular published by the Whitlock Cordage Company, 46 South street, New York. Any of our readers interested in this subject should send for a copy of the circular.

The Motsinger rotary engine is described in Bulletin 2 just published by the Motsinger Rotary Engine Company, Fredonia, Pa., regarding which the manufacturer makes the following statement: "The single rotary piston engine has from the invention of the first steam engine been the ideal of most inventors and mechanical engineers. The great Watt himself tried hard to make a successful rotary piston engine and failed. Perhaps more money has been spent in research work on this type of engine than on all other types combined. Yet with great respect for the reciprocating engine, which has done so much for humanity, and for the turbine which also promises much, the inventor of our engine, after years of study of known defective conditions, has solved this fascinating problem by the completion of the Fotsinger Double Rotary Engine, which not only eliminates all the bad features of both reciprocating and turbine engines, but retains all their good points. And, like all great scientific discoveries, it is simple in construction, and will prove the longest lived under hard service."

The Prest-O-Lite Welder is described in Book 7 just issued by the Prest-O-Lite Company, Inc., 818 Speedway, Indianapolis, Ind. The manufacturer states that the use of "Presto-O-Lite means a high-pressure installation plant without generators, piping or loss of gas, and that by the use of Prest-O-Lite your entire welding or cutting plant can be quickly and easily moved about and concentrated at the point of use. Using Prest-O-Lite you pay only for the gas you use. You do not pay for wasted gas because none is wasted. In nearly all cases the entire Prest-O-Lite outfit can be operated by one man. The use of Prest-O-Lite makes any good welding and cutting equipment doubly efficient and insures economy, portability, safety, simplicity and ease of operation. It requires no attention—is always ready for instant service." Book 1 contains a fully illustrated description of the Prest-O-Lite welder and a statement of all the claims made by the manufacturer regarding portability, economy, convenience, safety, control and durability. A copy of this booklet will be sent free to any of our readers upon request.

The great size of the business conducted by the B. F. Sturtevant Company, Hyde Park, Boston, Mass., may be realized when it is stated that the company publishes 70 catalogues and bulletins describing its products. These publications have been abridged, and a concentrated description of the Sturtevant products has been published in the new "General Catalogue" just off the press. Any of our readers interested in engines, generating sets, economizers, motors, mechanical draft apparatus, etc., should send for a copy of the general catalogue No. 195-O.

Regrinding valves are described in an illustrated pamphlet just published by the Penberthy Injector Company, Detroit, Mich. "The ever-increasing demand to-day by power plant owners and steam users in general is for valves that will give absolutely reliable service and dependability under high pressures and severe conditions, and that are free from unnecessary renewal of disks and repair parts. To meet this demand the Penberthy regrinding valve has been designed. It is the result of many years of practical experience in the manufacture of high-grade brass goods, and embodies the best mechanical ideas ever employed in mechanical valve construction. The distribution of metal is such that parts subjected to the greatest strain and wear have proportionately heavier walls. For the present we illustrate only the medium pattern type, which is designed to stand a constant working pressure of 200 pounds."

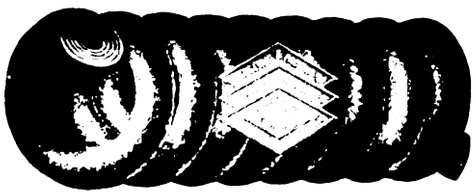
Electric dynamometers are described in Bulletin 48701 published by the Sprague Electric Works, 527 West Thirty-fourth street, New York. "The Sprague electric dynamometer is a machine for measuring horsepower, generated or absorbed. It is a device by means of which actual values of torque and speed can be measured at any and all loads and speeds within the range of the machine under test. It is the ideal device for testing gasoline engines and other prime movers; for testing the power required to drive centrifugal pumps; for testing belts, tires and transmissions. It differs from all other forms of dynamometers in many features which make it pre-eminently suited for the classes of work to which it is applied. Among these features are flexibility, accuracy, simplicity, reliability, economy, the widest range of speeds and the maximum braking effort at all speeds. The Sprague electric dynamometer is built in all sizes from 1 horsepower to 200 horsepower, and for speeds up to 3,500 revolutions per minute."

COBBS HIGH PRESSURE SPIRAL PISTON

AND

VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

NEW YORK BELTING AND PACKING CO.

91 and 93 Chambers Street, NEW YORK

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ST. LOUIS, MO., 218-220 Chestnut Street
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SAN FRANCISCO, CAL., 129-131 First St., Oakland
BOSTON, MASS., 232 Summer Street
PITTSBURGH, PA., 420 First Avenue
PORTLAND, ORE., 40 First Street
SPOKANE, WASH., 157 S. Monroe Street

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Walter B. Snow, Publicity Engineer, 136 Federal street, Boston, Mass., has published a folder entitled "How?" which is intended to be the answer to a question so often asked Mr. Snow, "How do you take charge of a client's publicity?" Mr. Snow answers the question in part as follows: "Through a highly specialized organization we are likely to possess, or can readily acquire, an intimate acquaintance with our client's products, their uses and their markets—particularly in the engineering field. Backed by this knowledge we work from the inside, assuming all the duties of an efficient publicity department plus those of an advertising agency—thus duplication of effort is avoided. Regular service is rendered at a salary rate, covering in a single fixed charge all the items of supervision, copy, editorial and clerical work and correspondence. The client contracts through us at net cost with trade papers, printers, engravers, etc. Special work is undertaken on a per diem basis for exact time consumed. National advertising is handled on the usual agency basis. Charges for circularizing are at established rates per thousand."

"Lutz Compression Tools and a Prize Contest in Connection with Them" are the subjects of circulars published by Lutz-Webster Engineering Company, Philadelphia, Pa. This company states: "We have been told that Lutz compression tools fit the needs of almost every condition and requirement of mechanics generally. We want you to prove it. This contest is designed to bring out the best points of merit of Lutz tools from mechanics everywhere, in their regular use, unusual applications and in the origination of new ideas that may be used commercially. To those not having Lutz tools we will grant a special discount of 15 percent from net list prices for this contest only, provided they are ordered in conjunction with the filing of attached registration blank. Tools may be charged to account of responsible concerns, provided formal order is attached to registration card, or will be forwarded through local dealers C. O. D. Usual 30 days' free trial, with return of purchase price, if desired. In addition to cash prizes we will pay for original ideas of value. A chance for a valuable prize—payment for your suggestions and a set of tools at a reduced price."

BUSINESS NOTES

AMERICA

N. L. STEBBINS, 132 Boylston street, Boston, Mass., who for many years has made a specialty of marine photographic views, has incorporated his business under the above title, and it will be continued under his personal management. Mr. Stebbins states that he has the most complete collection of negatives of naval vessels, steamships, sailing vessels and yachts in this country. With increased capital and the latest improved instruments, the new corporation is in a position to maintain its established reputation for good work in every line of commercial photography. The corporation has purchased the photographic printing business of Mr. E. V. Gleason, who for twenty years has had charge of that department of Mr. Stebbins' establishment, and this part of the business will be continued under Mr. Gleason's direction.

THE CHAMBERLIN COMPANY, Free Press building, Detroit, announces a change of address to 1201, 2 and 3 Kresge building. This company has made a specialty of sales and advertising campaigns for manufacturers of machinery, power plant equipment and other products of a more or less technical nature for a number of years past. Recently, C. W. Brooke, an engineer and long experienced in sales and advertising campaigns in Pittsburg and Buffalo districts, has acquired an interest in the Chamberlin Company, and in keeping with the policy of expansion on the part of the organization, goes to it as their secretary and treasurer. The Chamberlin Company has retained for a period of some nine or ten years a number of the largest and most attractive accounts in the power plant field. In addition to the special fields which heretofore have required exclusive attention, the new organization will make a feature of handling sales and advertising campaigns for manufacturers in the electrical world as well as the preparation of technical matter on a special assignment basis for advertisers in general. William M. Chamberlin, the head of the company, has had a wide experience along the line of art, printing and general advertising, having been engaged exclusively in the technical field for the past ten years.

The Whole Edition of Our

MARINE TERMINAL NUMBER

published in March, 1914, was sold out in 4 or 5 days and requests for copies are still coming in.

Meantime, many important developments have taken place in connection with these terminals.

The subject is of such great importance that we shall publish another

MARINE TERMINAL NUMBER

March, 1915, and we want to urge any of our readers who are interested in the subject of the economical handling of freight at Marine Terminals to communicate with us.

INTERNATIONAL MARINE ENGINEERING

17 BATTERY PLACE - - - - NEW YORK

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THE EXPERIENCE OF A MARINE ENGINEER with an A. B. C vertical engine. The American Blower Company, Detroit, Mich., has received the following letter from E. H. Parry, chief engineer, steamer *James Corrigan,* Marine Postoffice, Detroit, Mich. Mr. Parry adds as a postscript to his letter that the old casting he mentions was broken by falling and not through wear: "Will you kindly ship me a finished casting marked A. 648 for blower engine No. 4400, type A, size 7 by 7, to steamer *James Corrigan?* We have three of your engines in use on the *Corrigan* that have been in constant use through the season of navigation since the spring of 1908, and this will be the first expenditure for repairs in that time. Two of the engines are connected to dynamos and one to the fan that furnishes air for draft system to boilers. If you will ship this casting by parcels post it will be delivered to us as we pass Detroit by the United States mail boat."

RECENT ORDERS RECEIVED by The McNab Company, Bridgeport, Conn. The McNab Company writes to INTERNATIONAL MARINE ENGINEERING that it has received, recently, the following orders: Two Willett-Bruce automatic steamship whistle controls for steamship *Great Northern* and steamship McNab direction indicators for Pacific mail steamers *Persia, Nile, San Jose, Peru, City of Para, Pennsylvania, City of Sydney, Aztec, San Juan,* etc. This repeat order now completes the fleet installation with this instrument. The Southern Pacific Company has sent in a repeat order and been supplied with seven McNab direction indicators for their steamers. McNab direction indicators are installed and being installed on the new steamships *John D. Rockefeller* and *John D. Archbold,* the latter vessel completing at the Newport News Shipbuilding & Dry Dock Company for the Standard Oil Company of New Jersey. Three McNab direction and revolution indicators, one McNab pneumatic counter, and one Willett-Bruce automatic steamship whistle control have been ordered for new steamship *J. A. Moffett,* completing at the Union Iron Works Co., San Francisco, for the Standard Oil Company of California. Thirty-two furnaces in boilers of the steamships *Mexican* and *Columbian* have recently been installed with McNab "Cascade" circulators and fuel economizers, and one Willett-Bruce automatic steamship whistle control has been installed on steamship *Columbian* of the American-Hawaiian Steamship Company of New York.

PROBABLY THE GREATEST RECORD of hoisting engine production made by any one concern is that of the Lidgerwood Manufacturing Company, 96 Liberty street, New York, which has built more than 37,000 steam and electric hoists during the forty odd years that it has been in business. A comparison of the types of machines built to-day with those of thirty years ago still in operation is very interesting from an engineering standpoint, as showing the improvements and advancement that have been made in hoisting machinery practice.

IN REFERENCE TO FUSIBLE PLUGS.—During September, 1914, the following companies submitted affidavits to the Steamboat Inspection Service at Washington, D. C., in regard to the manufacture of fusible plugs, as required by the bureau's circular letter dated June 30, 1914: Sucesores De Abarca, San Juan, P. R.; Manistee Iron Works, Manistee, Mich.; Crane Company, Bridgeport, Conn.; Union Iron Works Company, San Francisco, Cal.; Vulcan Iron Works, Cairo, Ill.; The Campbell's Creek Coal Company, Dana, W. Va.; Wiggings Ferry Company, St. Louis, Mo.; Sherwood Manufacturing Company, Buffalo, N. Y.; Elisha Webb & Son Company, Philadelphia, Pa.; Milwaukee Dry Dock Company, Milwaukee, Wis.; C. H. McCutcheon, Buffalo, N. Y.; L. Katzenstein & Company, New York; The Chaplin-Fulton Manufacturing Company, Pittsburg, Pa.; The McKinnon Iron Works Company, Ashtabula, Ohio; Richards Iron Works, Manitowoc, Wis.; Dunham Towing & Wrecking Company, Chicago, Ill.; Fries & Company, Buffalo, N. Y.; John Baizley Iron Works, Philadelphia, Pa.; W. S. Cahill Company, Baltimore, Md.; Kelly & Jones Company, Greensburg, Pa.; General Fire Extinguisher Company, Providence, R. I.; American Injector Company, Detroit, Mich.

DURING THE MONTH OF OCTOBER the following-named companies submitted affidavits in regard to the manufacture of fusible plugs as required by the Bureau of Steamboat Inspection Service's circular letter, dated June 30, 1914: Moran Flexible Steam Joint Company, Louisville, Ky.; Deck Bros., Buffalo, N. Y.; Thomas B. Banner, Chicago, Ill.; The Skinner & Arnold Company, Albany, N. Y.; B. Hoffmann Manufacturing Company, Milwaukee, Wis.; Southern Brass Manufacturing & Plating Company, Houston, Tex.; Gillett, Eaton & Squire, Lake City, Minn.; A. Nicholson, Albany, N. Y.

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of small and large power for propelling vessels of all classes and for auxiliary drive. The most efficient propelling unit built

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built in sizes from 1 kw. up—both direct-connected and gear driven. These units are simple, reliable and very efficient.

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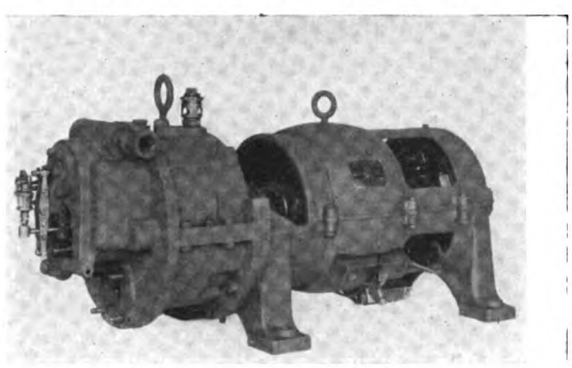
for operating main turbine from bridge. Instantaneous operation, avoids confusion and accidents. Found satisfactory in test by Navy Department



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ORDERS FOR ECKLIFF CIRCULATORS.—The Eckliff Automatic Boiler Circulator Company, 46 Shelby street, Detroit, Mich., writes INTERNATIONAL MARINE ENGINEERING that among recent orders for its circulators are the following: Coastwise Transportation Company's steamship *Middlesex*, St. Joseph-Chicago Steamship Company's steamship *Eastland*, four tugs for the Isthmian Canal Commission, United States auxiliary cruiser *Dixie*, United States army engineer dredge *Burton*, United States army engineers' tug *Spear*, and three plants for the Great Lakes Dredge & Dock Company.

THE ABBOTT BALL COMPANY, Hartford, Conn., states that it has installed special machinery whereby it is able to turn out all sizes of balls from ⅛ inch to ½ inch in diameter, and that it will soon be in a position to furnish all other sizes.

TRADE PUBLICATIONS

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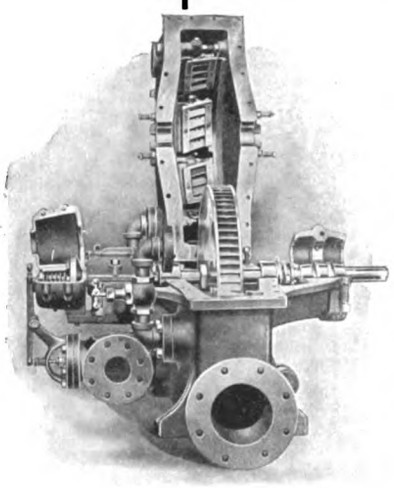

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Danger of Handling Heavy Weights in Cold Weather with Chain Slings.
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The Present Position of the Marine Gasolene Engine. Illustrated.
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The Towboat Industry on Western Rivers.
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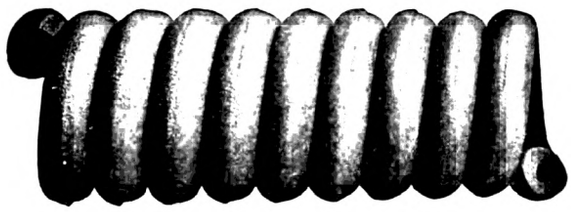

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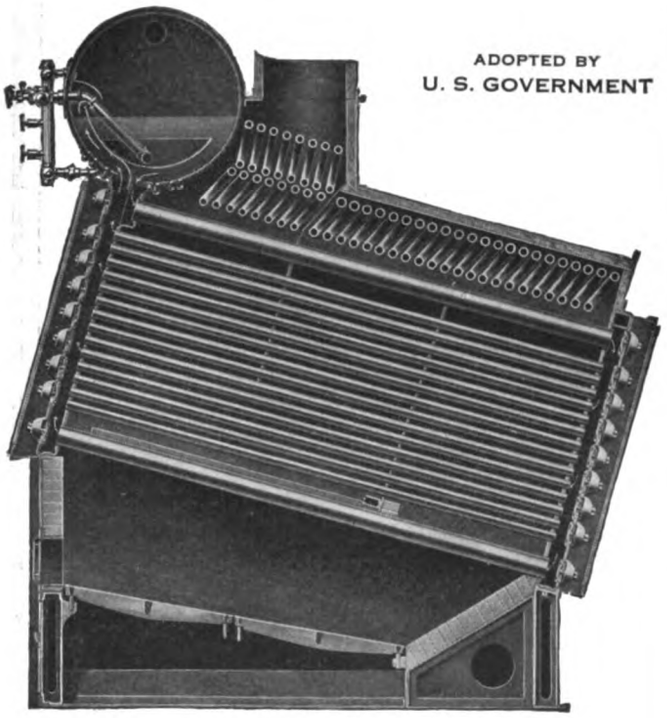

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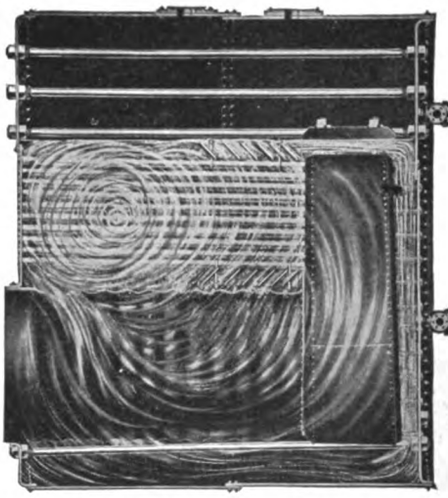

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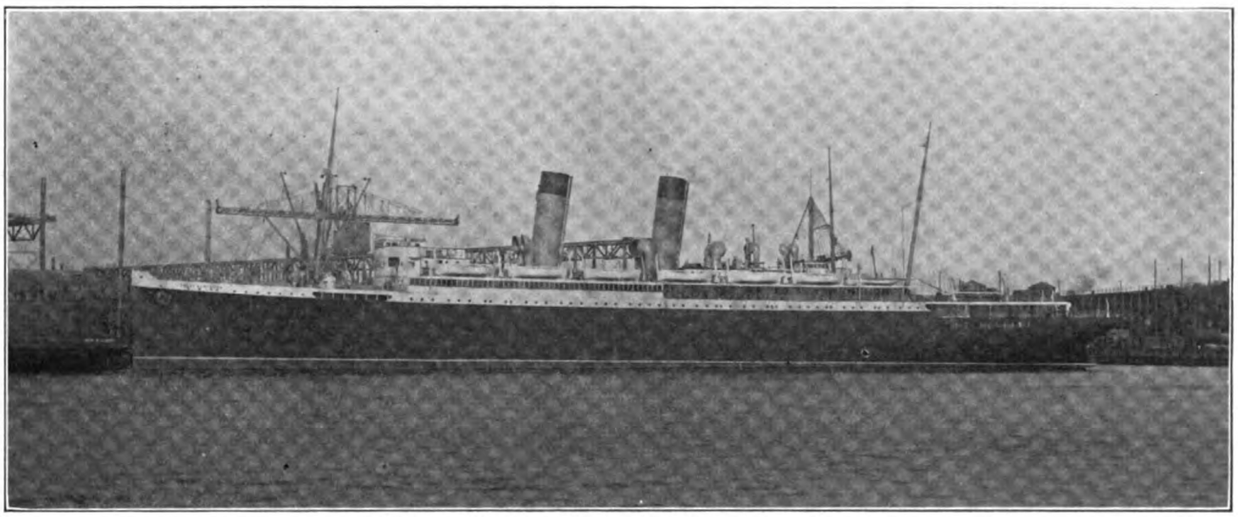

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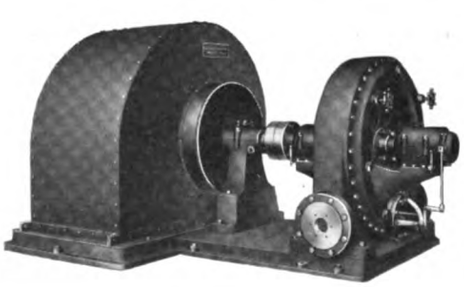

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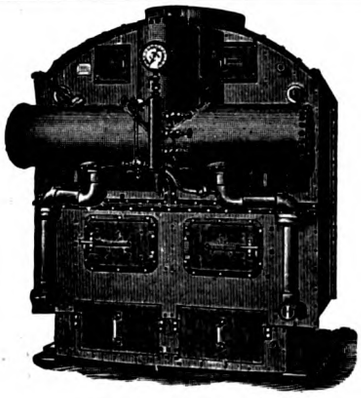

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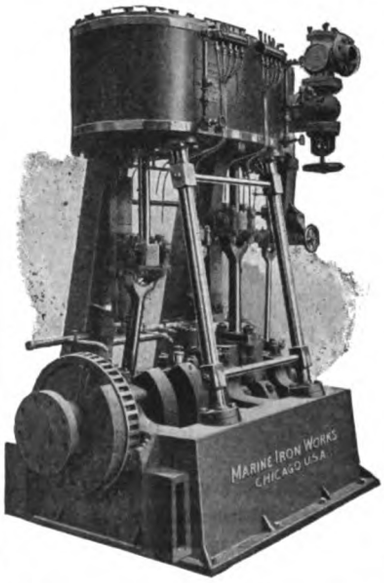

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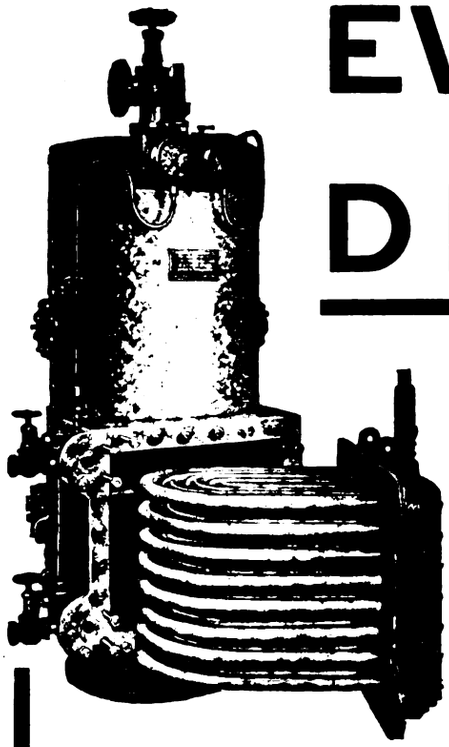

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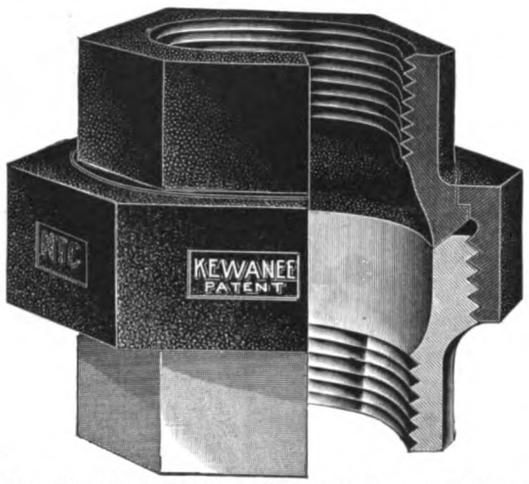

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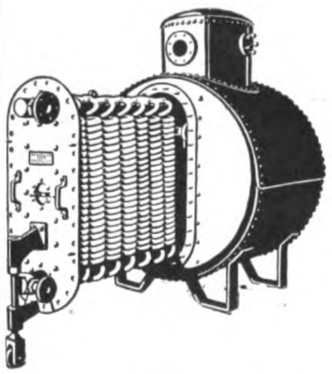

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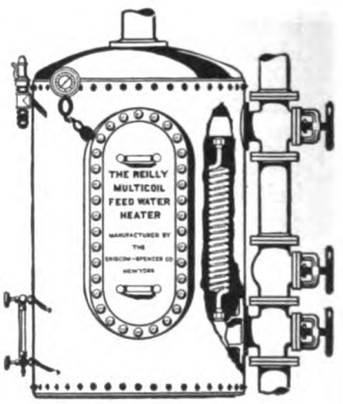

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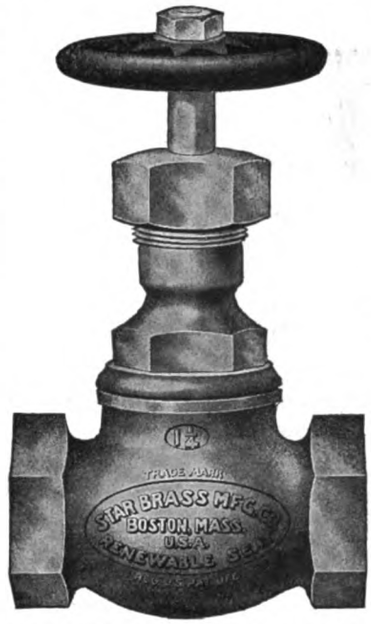

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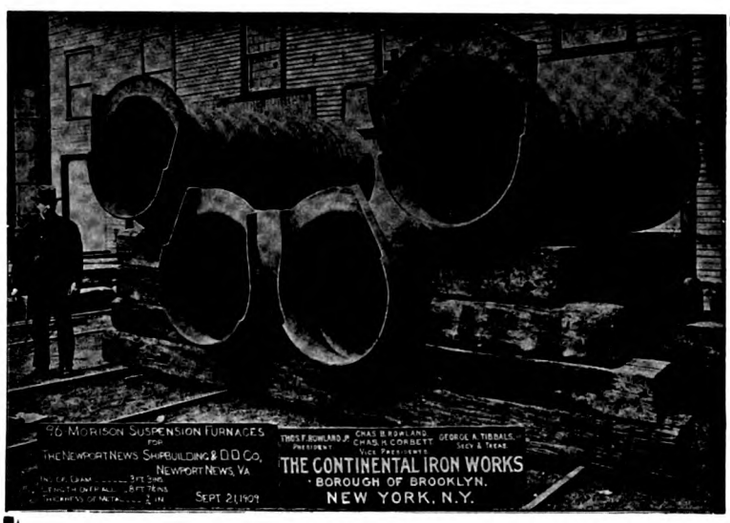

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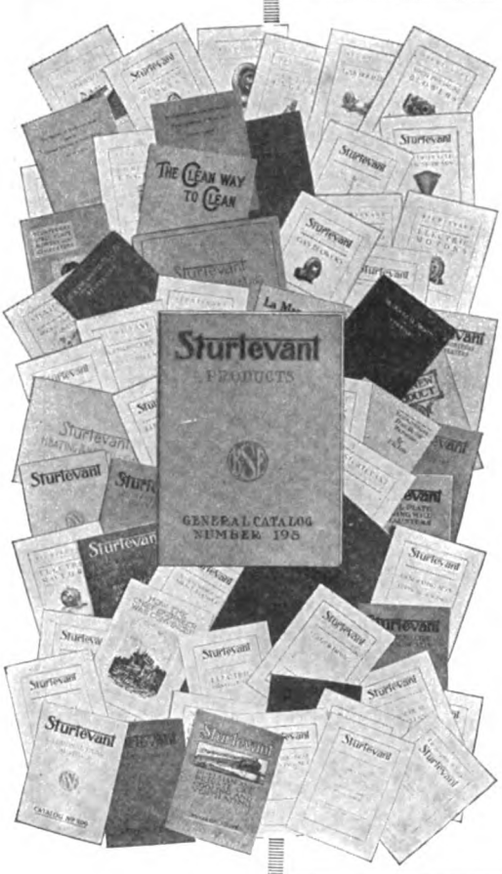

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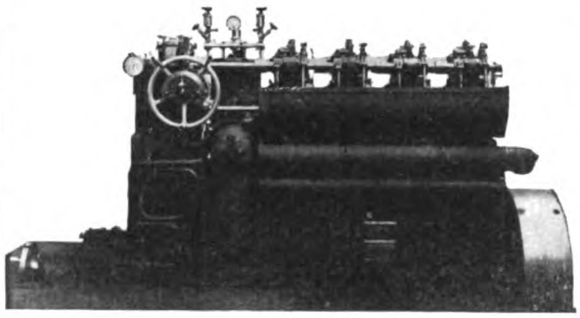

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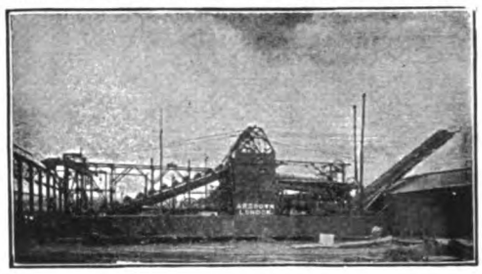

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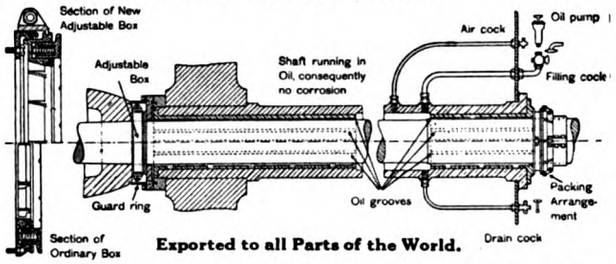

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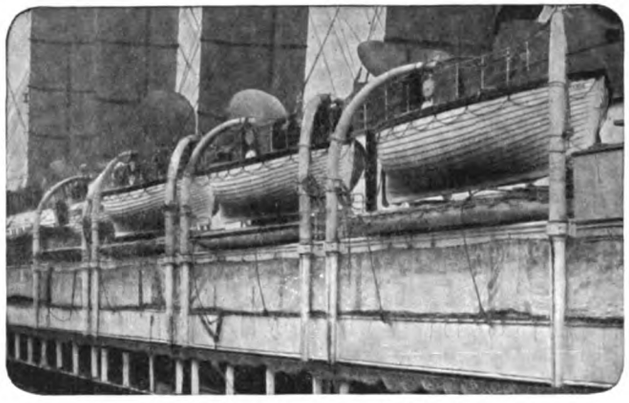

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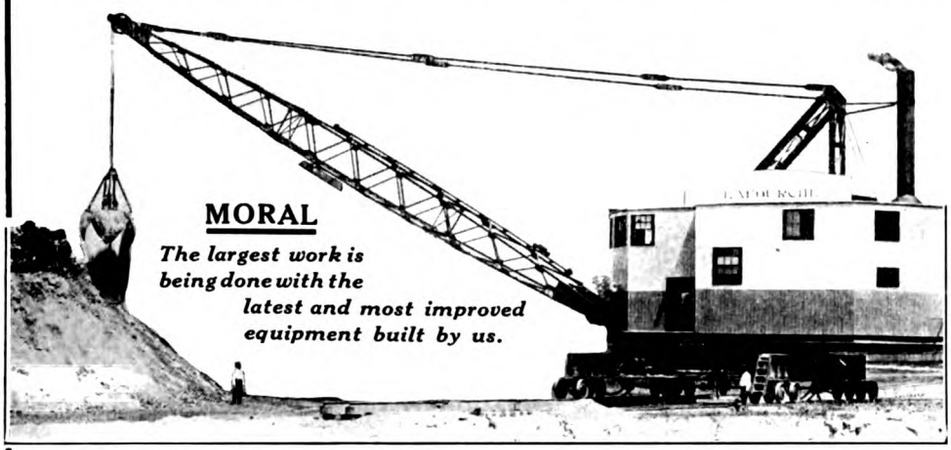

The crane shown in the illustration is owned and operated by the Lafourche Basin Levee Board. It is fitted with an 88 foot boom and 2 1-2 yard Hayward Orange Peel Bucket.

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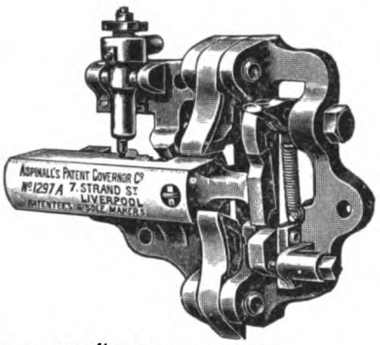

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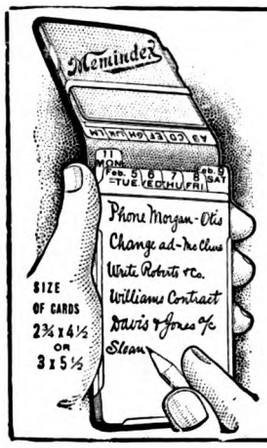

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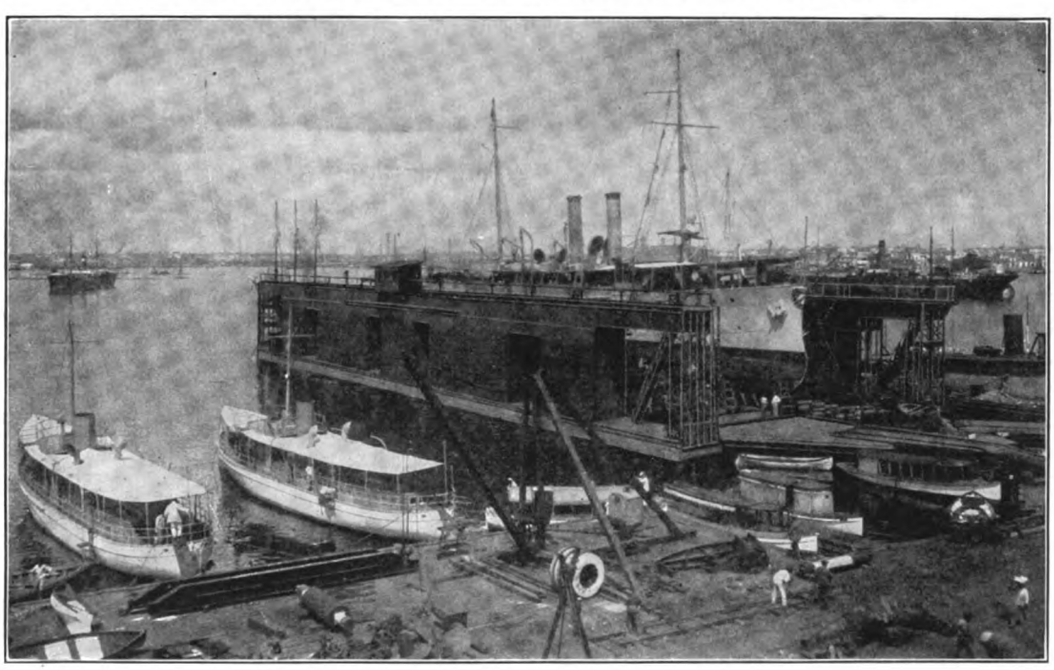

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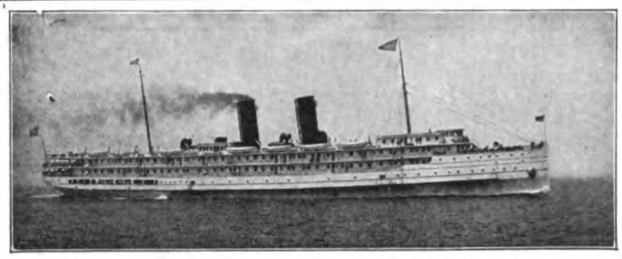

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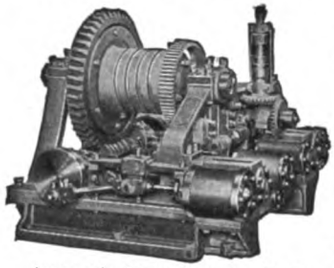

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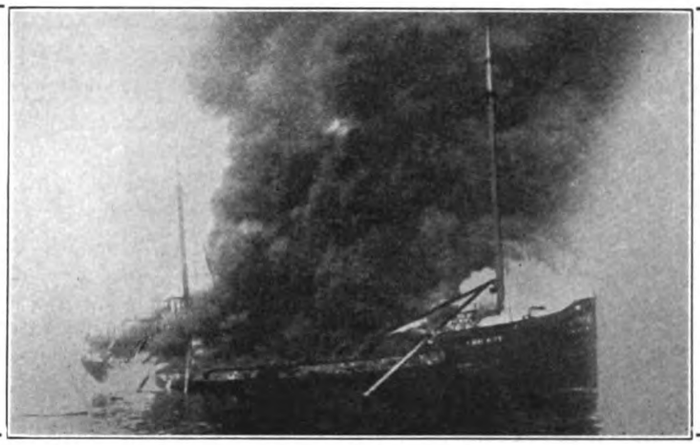

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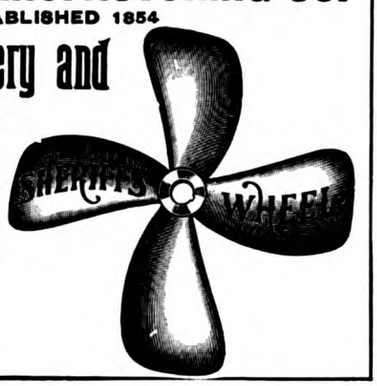

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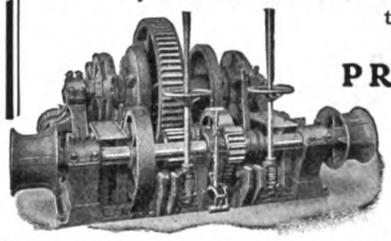

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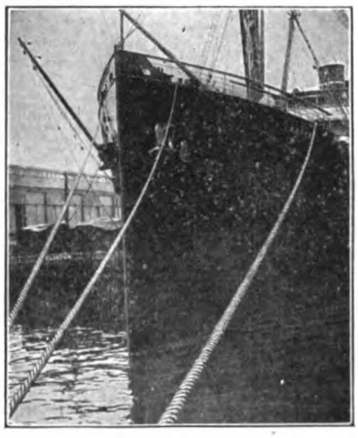

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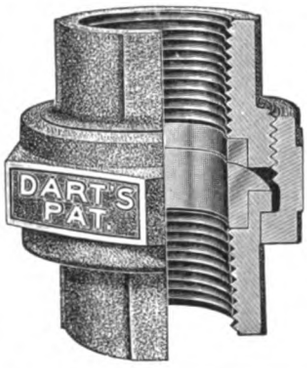

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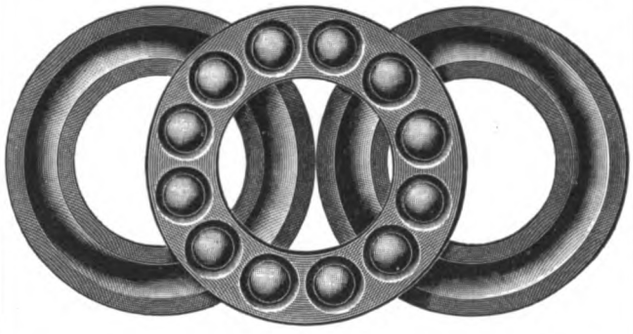

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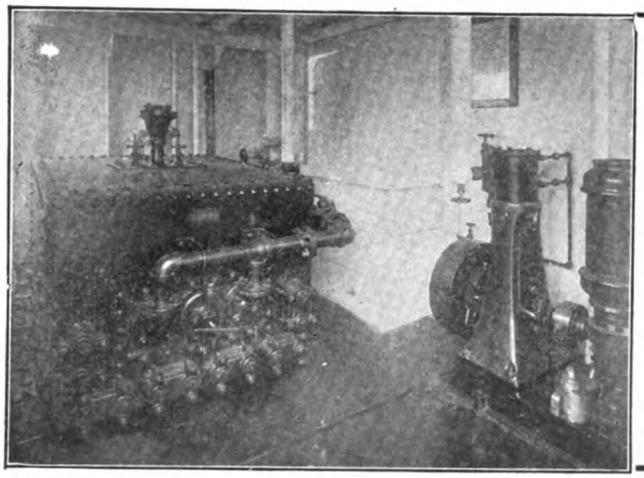

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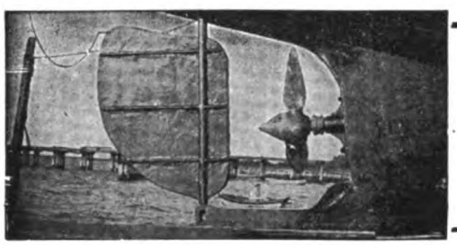

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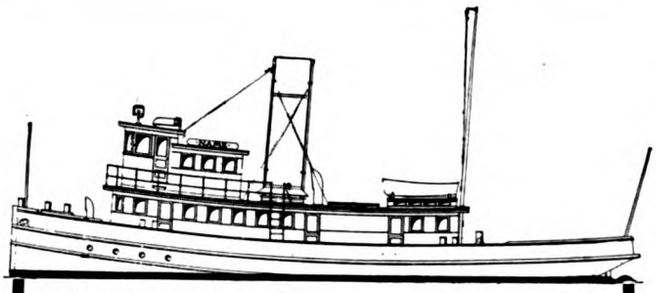

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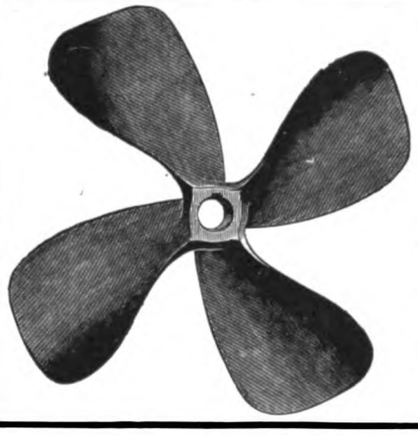

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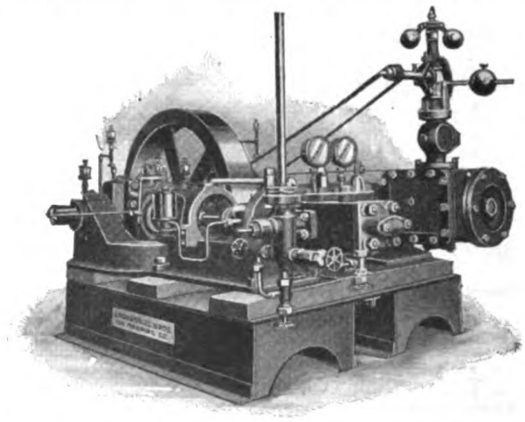

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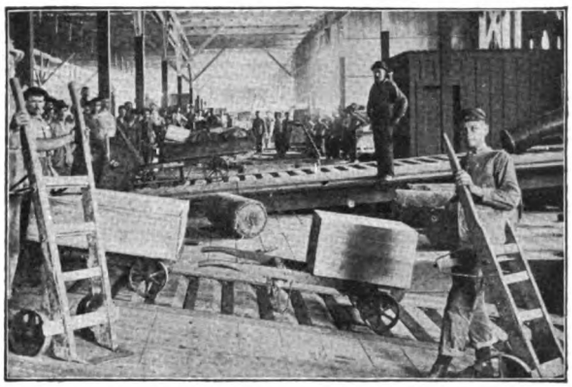

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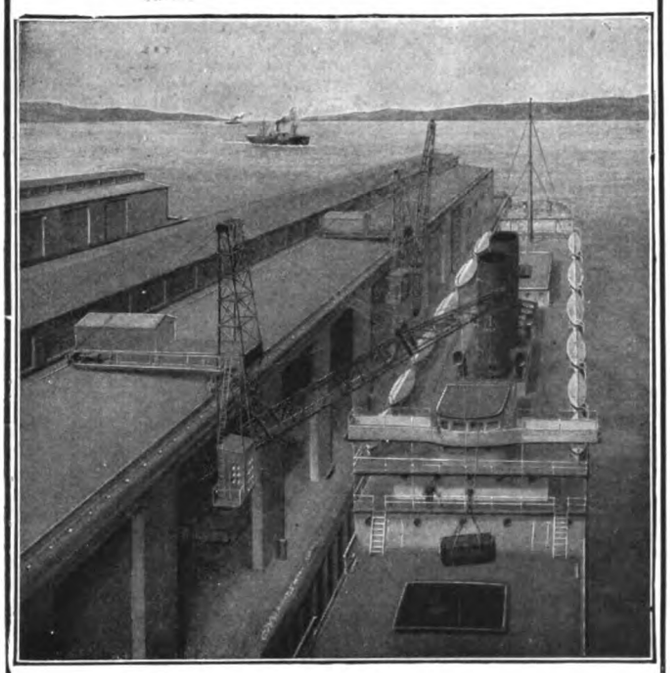

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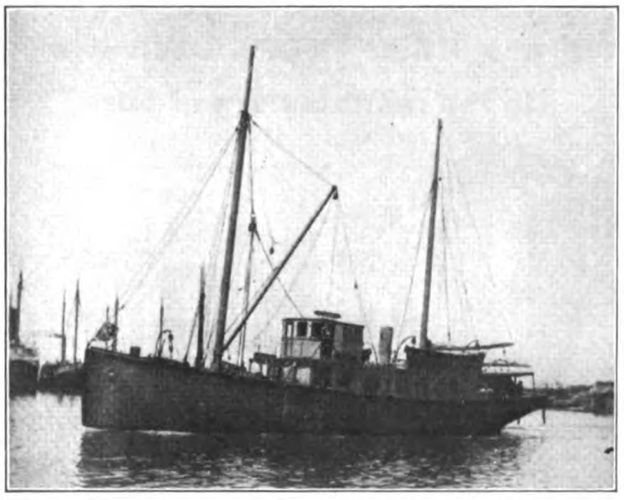

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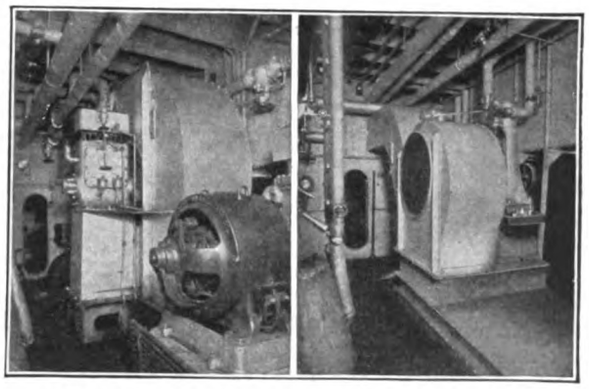

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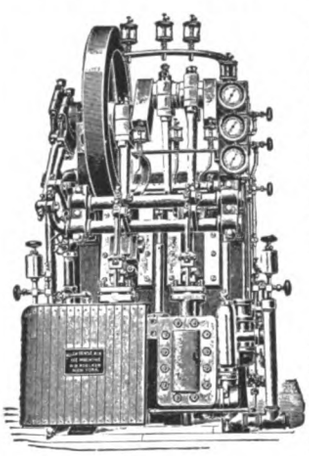

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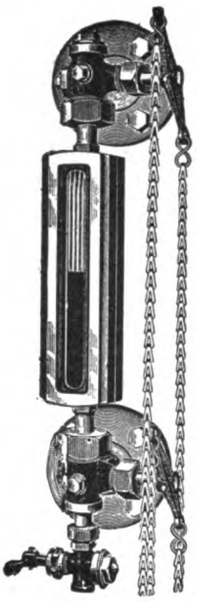

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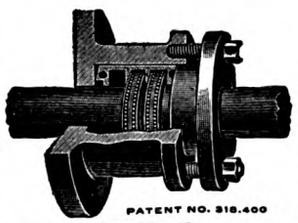

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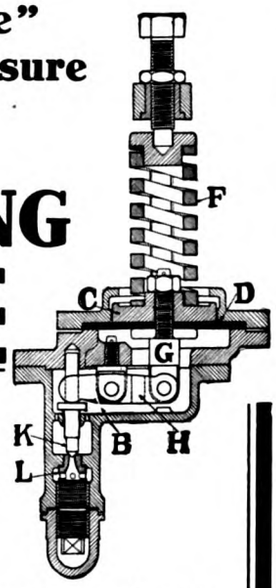

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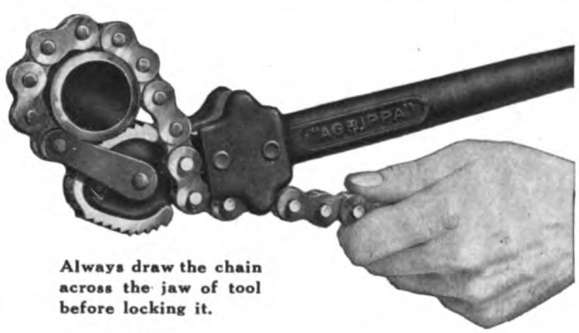

Always draw the chain across the jaw of tool before locking it.

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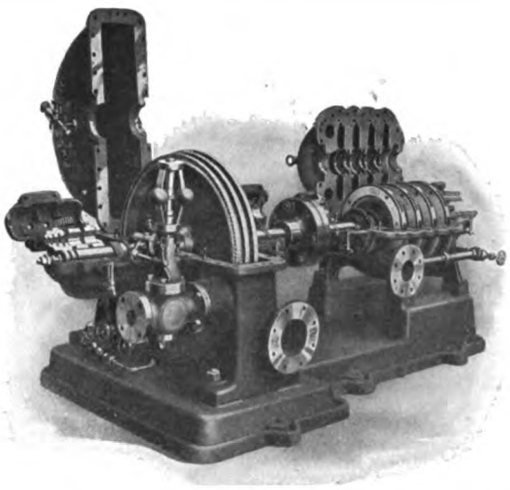

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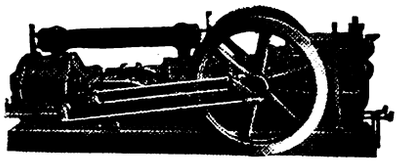
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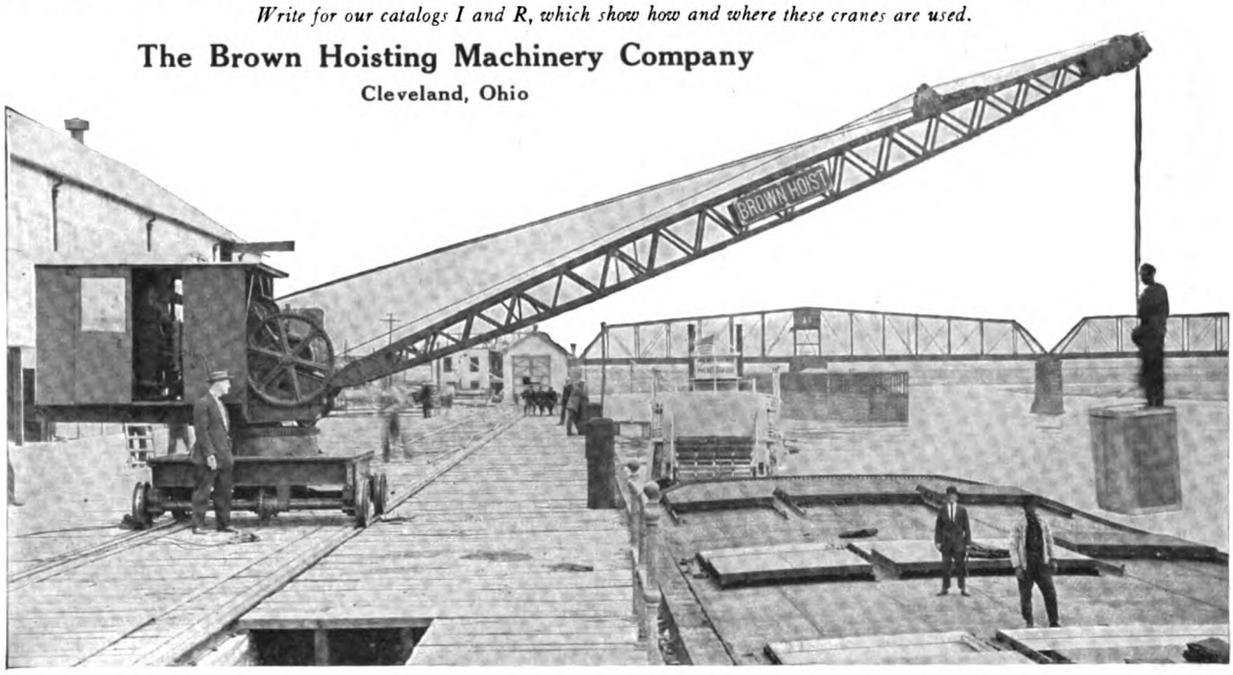

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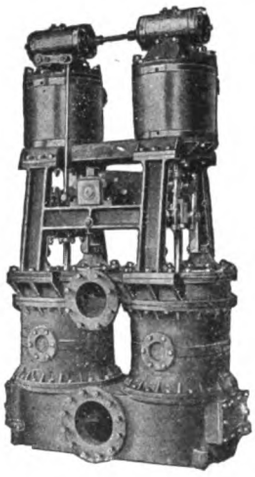

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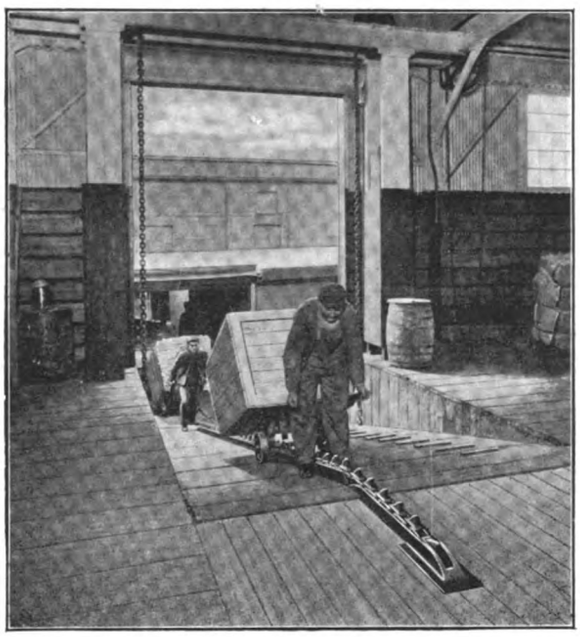

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